SiVEST SA (PTY) LTD

# BASIC ASSESSMENT (BA) FOR THE PROPOSED CONSTRUCTION AND OPERATION OF THE 250 MW PATATSKLOOF WIND ENERGY FACILITY (WEF), BATTERY ENERGY STORAGE SYSTEM (BESS), GRID CONNECTION AND ASSOCIATED INFRASTRUCTURE LOCATED NEAR CERES IN THE WITZENBERG LOCAL MUNICIPALITY, CAPE WINELANDS DISTRICT, IN THE WESTERN CAPE PROVINCE OF SOUTH AFRICA

# CULTURAL LANDSCAPES ASSESSMENT

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# SiVEST SA (PTY) LTD

# PROPOSED CONSTRUCTION OF THE PATATSKLOOF WIND ENERGY FACILITY AND ASSOCIATED GRID INFRASTRUCTURE, NEAR TOUWS RIVER, WESTERN CAPE PROVINCE, SOUTH AFRICA

# CULTURAL LANDSCAPE ASSESSMENT

## EXECUTIVE SUMMARY

### Introduction

Hearth Heritage was appointed by SiVEST on behalf of South Africa Mainstream Renewable Power Developments (Pty) Ltd to undertake a Cultural Landscape Assessment (CLA) which would form part of the Heritage Impact Assessment (Undertaken by PGS Heritage (Pty) Ltd) which will serve to inform the required BA Processes for the proposed construction of the 250MW Patatskloof WEF and associated grid infrastructure near Touws River in the Western Cape Province.

### Description

The proposed Pataskloof Wind Energy Facility is located approximately 18km north-east of Touws River in the Western Cape Province and is within the Witzenberg Local Municipality, in the Cape Winelands District Municipality.

The area proposed for development is located within an undulating Ceres Karoo landscape within which the predominant land use is game grazing. It is a semi-arid region and the vegetation is characteristic of the Succulent Karoo Biome. The area is covered in varying densities of knee high scrub, with tombstone weathered rock outcrops on the elevated areas of the site. Evidence of historic stock management is evident in the various stone kraals located on the site, often on the slopes of the small koppies. An absence of tall trees is noteworthy, with such landscape elements usually associated to cultural activity. The low vegetation accentuates the topography of the landscape, especially areas of elevation such as the Toverberg and Pramberg, which have been used

as orientating elements for game and travellers over the landscape through time. There is a farmhouse with some historic elements, as well as a few other historic and modern structures at various stages of use, and numerous farm tracks intersecting the large farm property but the site remains predominantly natural and very isolated. Natural ephemeral streams (currently dry) have cut through the landscape in shallow ravines, with some areas of shallow drainage having allowed for crop cultivation in the past. Various examples of water management through damming and wind pumps are evident on the landscape. Vehicles can be seen traversing the landscape from a distance due to the flat topography and the moving dust columns they create. More recent introductions of the Perdekraal WEFs, the Kappa Substation and other associated electrical grid infrastructure can be found in the general region and directly to the north of the Patatskraal site, which detract from the historic and natural wilderness character of the general region.

The Ceres Karoo region is a significant cultural landscape that reflects the relationship between man and nature over a period of time. This relationship has generally been sustainable, where biodiversity and ecological systems have been maintained in the utilisation of the landscape expressed in specific land use patterns. The surrounding land use indicates a social appreciation of the natural environment with low impact stock and game farming with limited farmstead crop cultivation. The vastness and relative homogenous nature of the cultural landscape is, however, often undervalued. If careful contextual planning is not followed, it will rapidly result in a cluttered wasteland. This does not mean that development is discouraged, but rather that the implementation of wind and solar energy farms should be planned holistically. It is the duty of the planning department to consider this application in terms of other renewable energy developments that are planned/proposed for the Ceres Karoo area, notably the proposed RE developments included in the cumulative impact section of this report.

Conservation: to protect the natural resources (water, air, land, sand, fishes, etc.), ecosystems (reefs, fynbos), biological abundance (flora and fauna), landscapes and the local culture.
Development: to protect social and economic progress, without damaging or depleting the natural resources (sustainable development).

The findings of this report, coupled with the proposed layout for development of wind turbines, which considers appropriate placement in terms of wind energy capacity, concludes that the development can be permitted within the site if the report's recommendations are followed. The mitigating recommendations in this report consider the ecological, aesthetic, historic and socio-economic value lines that underpin the layers of significance that combine to create the character of the place and the

cultural landscape of the Ceres Karoo. These recommendations include road and farmstead complex buffers which incorporate cultivated areas and graves, steep slope and ridgeline no-go areas as well as consideration of the unique land form of the site, CBA and ESA no-go areas, as well as mechanisms to support any non-landowner residents that live on the site in being able to continue their indigenous land use patterns, knowledge and social systems, although none were identified during this fieldwork. These mitigations will reduce the impact on the surrounding landscape and heritage resources but due to the high visual impact of the turbines, largely a result of their height, the negative impact to the cultural landscape cannot be removed, only reduced from very high to moderate.

### Heritage Indicators

The conclusion of this CLA study has culminated in the map (*Figure 1*) showing location of proposed turbines and WEF infrastructure with the following heritage indicators and development buffers:

- Landscape units D and E are suitable for sensitive WEF infrastructure development;
- A 500m buffer to either side of the district road for turbine and infrastructure placement (Patatskloof WEF does not propose turbines or infrastructure within this buffer);
- 300m buffer to either side of identified significant historic farm roads (pink) for turbine placement, substation and laydown areas;
- The historic route (yellow) that passes through Stinkfontein site is no longer in use as such, but should be reinstated as a walking trail and open to public access.
- 1000m buffer around historic farmsteads (red circles) for turbine placements; and
- 50m outer boundary buffer for roads and infrastructure around farmsteads including cultivated areas and graves – integrity of farmstead complex as a whole should be retained and no WEF roads running through farmstead complexes;
- 200m freestanding graded heritage structure buffer for new roads and infrastructure;
- 100m buffer from cemetery or unmarked burial for all development;
- 400m buffer around water management bio-cultural landscape elements (blue circles);
- 600m buffer around significant Stinkfontein site (orange circle);
- existing roads to be used with minimal upgrade as far as possible;
- riverine corridors 100yr flood line buffer (ecological) or 100m buffer (archeological) whichever is further (buffers not indicated).
- CBA and ESA no-go areas for all development (green shading – turbines 5, 23, 18), unless otherwise recommended by the biodiversity and environmental specialist studies for this site;
- Pienaarspoort gateway buffer included in the 300m farm road buffer and unit A.

Further, the following changes to the current proposed layout is recommended:

- 18 current proposed turbine placements (red) have been found unacceptable for their negative impacts but could be accommodated in landscape unit D where appropriate;
- The substation option 1 and Gridline alternative 3 should be located out of the CBA, without impacting on the riverine corridor flood line and slopes over 3%.

Further heritage indicators and recommendations for construction/ decommissioning and operational phases unsuitable for mapping have been made in the CLA (Section 12 on page 67) and are necessary for the identified negative impacts to be reduced from very high to medium negative impact of the proposed Patatskloof WEF and associated infrastructure on the cultural landscape.

## Conclusion and Impact Statement

From this study it is recommended that 18 of turbines are not feasible in their current proposed locations for the proposed Patatskloof WEF when taking into consideration impacts to cultural landscapes. The substation areal location requires some layout alteration to accommodate the CBA. With these buffers in place and all other recommendations followed, the overall impact to the cultural landscape for the proposed Patatskloof WEF and associated grid connection and infrastructure can be reduced from very high to moderate. There are no fatal flaws and the development can proceed with CLA recommendations and mitigation in place.

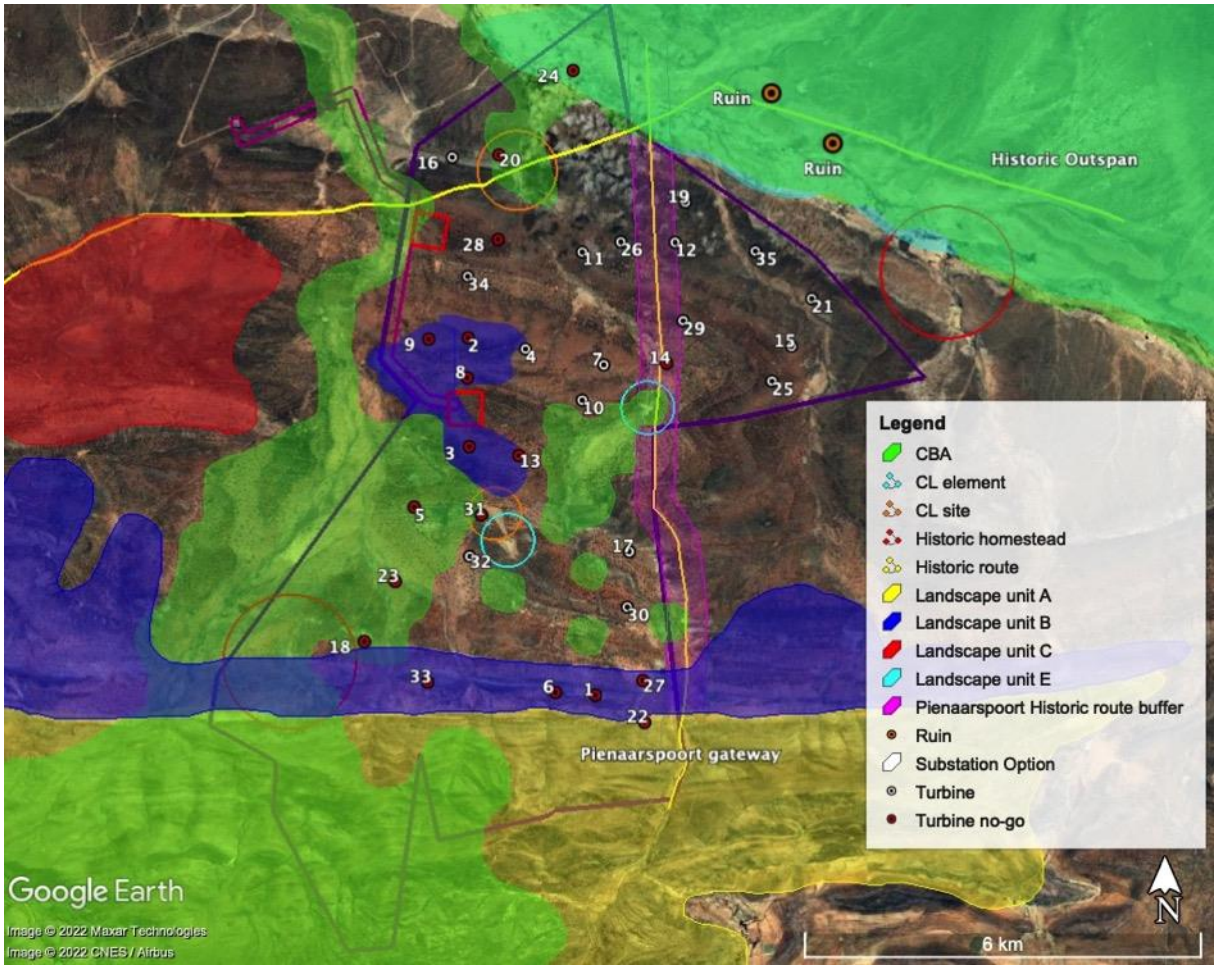


*Figure 1: Cultural Landscapes Assessment heritage indicators and buffers map for proposed Patatskloof WEF development (Note: 100m/ flood line riverine corridor and ESA buffers not indicated).*

NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND ENVIRONMENTAL IMPACT REGULATIONS, 2014 (AS AMENDED) - REQUIREMENTS FOR SPECIALIST REPORTS (APPENDIX 6)

| Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6 | Section of Report |
|---|---|
| 1. (1) A specialist report prepared in terms of these Regulations must contain-<br>a) details of-<br>i. the specialist who prepared the report; and<br>ii. the expertise of that specialist to compile a specialist report including a curriculum vitae; | 1.2 |
| b) a declaration that the specialist is independent in a form as may be specified by the competent authority; | |
| c) an indication of the scope of, and the purpose for which, the report was prepared; | 1.1 |
| (cA) an indication of the quality and age of base data used for the specialist report; | 1.3 |
| (cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change; | 12 |
| d) the date and season of the site investigation and the relevance of the season to the outcome of the assessment; | 1.3.2 |
| e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used; | 1.3 |
| f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives; | 10 |
| g) an identification of any areas to be avoided, including buffers; | 12;15; *Figure 1* |
| h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of | *Figure 1*; Figure 37; Figure 45 |

| | |
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| the site including areas to be avoided, including buffers; | |
| i) a description of any assumptions made and any uncertainties or gaps in knowledge; | 2 |
| j) a description of the findings and potential implications of such findings on the impact of the proposed activity, (including identified alternatives on the environment) or activities; | 10;12 |
| k) any mitigation measures for inclusion in the EMPr; | 12;15 |
| l) any conditions for inclusion in the environmental authorisation; | 12;15 |
| m) any monitoring requirements for inclusion in the EMPr or environmental authorisation; | 12;15 |
| n) a reasoned opinion-<br>i. (as to) whether the proposed activity, activities or portions thereof should be authorised;<br>(iA) regarding the acceptability of the proposed activity or activities; and<br>ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan; | 15 |
| o) a description of any consultation process that was undertaken during the course of preparing the specialist report; | 1.3.6 |
| p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and | 1.3.6 |
| q) any other information requested by the competent authority. | |
| 2) Where a government notice *gazetted* by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply. | |

SiVEST SA (PTY) LTD

# PROPOSED CONSTRUCTION OF THE PATATSKLOOF WIND ENERGY FACILITY AND ASSOCIATED GRID INFRASTRUCTURE, NEAR TOUWS RIVER, WESTERN CAPE PROVINCE, SOUTH AFRICA

## CULTURAL LANDSCAPE ASSESSMENT

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## Glossary of Terms

### Cultural Landscapes Terminology

"perceptual qualities" Aspects of a landscape which are perceived through the senses, specifically views and aesthetics.

"cultural landscape" A representation of the combined worlds of nature and of man illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal (World Heritage Committee, 1992). Includes and extends beyond the study site boundaries.

"cultural landscape area" These are single unique areas which are the discrete geographical areas of a particular landscape type. Each will have its own individual character and identity, even though it shares the same generic characteristics with other areas of the same type.

"study site" The study site is assumed to include the area within the boundaries of the proposed development

"characteristics" elements, or combination of elements, which make a particular contribution to distinctive character.

"elements" individual components which make up the landscape, such as trees and fences.

"landscape character" A distinct, and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.

"landscape character assessment" This is the process of identifying and describing variation in the character of the landscape. It seeks to identify and explain the unique combination of elements and features (characteristics) that make landscapes distinctive. This process results in the production of a Landscape Character Assessment.

"sense of place" The unique quality or character of a place, whether natural, rural or urban. It relates to uniqueness, distinctiveness or strong identity.

"scenic route" A public street designated as a scenic drive by a governing body in recognition of the high visual amenity alongside that public street, including background vistas of a mountain, open country, a coastline or a town; usually in the form of a scenic drive, but which could also be a railway, hiking trail, horse-riding trail or 4x4 trail.

"cultural significance" Aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

"development" Any physical intervention, excavation or action, other than that caused by natural forces, which may result in a change in the appearance or physical nature of a site or influence its stability and future well-being, including

(a) the construction, alteration, demolition, removal or change of use of a site or a structure on the site;

(b) the carrying out of any works on, over or under the site;

(c) the construction or putting up for display of signs or notice boards;

(d) any change to the natural or existing condition or topography of land; or

(e) any removal, physical disturbance, clearing or destruction of trees or vegetation or the removal of topsoil;

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| "heritage resource" | Heritage resource as defined in section 1 of the National Heritage Resources Act (25 of 1999) |
| "cultural heritage resource" | Places, objects and practices of cultural significance |
| "drift" | a watercourse crossing often associated with shallower areas that may be dry at times of the year |
| "tangible cultural heritage" | Physical heritage, such as buildings and objects, as opposed to intangible heritage |
| "intangible cultural heritage" | The practices, representations, expressions, knowledge, skills, as well as the instruments, objects, artefacts and cultural spaces associated therewith, that communities, groups and, in some cases, individuals recognise as part of their cultural heritage; – something considered to be a part of heritage that is not a physical object or place, such as a memory, tradition, language, belief or a cultural practice, (as opposed to tangible heritage) |
| "*kraal*" | Livestock enclosure common throughout the area. |
| "*krans*" | Cliff |
| "*legplaats*" | Stock post |
| "*matjieshuis*" | Mat or reed house |
| "*poort*" | portal usually associated with a gap between two higher elevations which separates two distinct landscapes, often related to a pass |
| *"skerm"* | Circular enclosures constructed out of dried bushes |
| *"trekboer"* | Semi-nomadic subsistence farmers who moved out of the Cape Colony |
| *"werf"* | Farmyard |
| *"Komsberg"* | tail fat (*stertvet)* - referring to the fat-tailed sheep of the khoekhoen pastoralists who occupied the area before and during the arrival of the *trekboere* |

List of Abbreviations

| | |
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| AIA | Archaeological Impact Assessment |
| BA | Basic Assessment |
| BAR | Basic Assessment Report |
| CHG | Cultural Heritage Survey Guidelines and Assessment Tools for Protected Areas in South Africa (May 2017) |
| CL | Cultural Landscape |
| CLA | Cultural landscape area |
| CSIR | Council for Scientific and Industrial Research |
| DEA | Department of Environmental Affairs |
| ECO | Environmental Control Officer |
| EIA | Environmental Impact Assessment |
| EMPr | Environmental Management Programme |
| GPS | Global Positioning System |
| HIA | Heritage Impact Assessment |
| HWC | Heritage Western Cape |
| IKS | Indigenous Knowledge Systems |
| MW | Mega Watts |
| NCW | Not Conservation Worthy |
| NEMA | National Environmental Management Act |
| NHRA | National Heritage Resources Act (25 of 1999) |
| PHRA | Provincial Heritage Resources Authority |
| PPP | Public Participation Process |
| PV | Photovoltaic |
| REDZ | Renewable Energy Development Zone |
| SAHRA | South African Heritage Resources Agency |
| SAHRIS | South African Heritage Resources Information System |
| SEA | Strategic Environmental Assessment |
| UNESCO | United Nations Educational, Scientific and Cultural Organisation |
| VIA | Visual Impact Assessment |
| WEF | Wind Energy Facility |

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| WHC | World Heritage Convention |

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# PROPOSED CONSTRUCTION OF THE PATATSKLOOF WIND ENERGY FACILITY AND ASSOCIATED GRID INFRASTRUCTURE, NEAR TOUWS RIVER, WESTERN CAPE PROVINCE, SOUTH AFRICA

# CULTURAL LANDSCAPE ASSESSMENT

## 1. INTRODUCTION

South Africa Mainstream Renewable Power Developments (Pty) Ltd (hereafter referred to as "Mainstream"), has appointed SiVEST SA (Pty) Ltd (hereafter referred to as "SiVEST") to undertake the required BA Processes for the proposed construction of the 250MW Patatskloof WEF and associated grid infrastructure near Touws River in the Western Cape Province.

The overall objective of the development is to generate electricity by means of renewable energy technology capturing wind energy to feed into the National Grid.

It is anticipated that the proposed Pataskloof WEF will comprise up to thirty-five (35) wind turbines with a maximum total energy generation capacity of up to approximately 250MW. The electricity generated by the proposed WEF development will be fed into the national grid via a 132kV overhead power line. The 132kV overhead power line will however require a separate EA and is subject to a separate BA process, which is currently being undertaken in parallel to the WEF BA process. A Battery Energy Storage System (BESS) will be located next to the onsite 33/132kV substation. The storage capacity and type of technology would be determined at a later stage during the development phase, but most likely will comprise an array of containers, outdoor cabinets and/or storage tanks.

In terms of the Environmental Impact Assessment (EIA) Regulations, which were published on 04 December 2014 [GNR 982, 983, 984 and 985) and amended on 07 April 2017 [promulgated in Government Gazette 40772 and Government Notice (GN) R326, R327, R325 and R324 on 7 April 2017], various aspects of the proposed development are considered listed activities under GNR 327 and GNR 324 which may have an impact on the environment and therefore require authorisation from the National Competent Authority (CA), namely the Department of Environment, Forestry and Fisheries (DEFF), prior to

the commencement of such activities. Specialist studies have been commissioned to assess and verify the project under the new Gazetted specialist protocols.

## 1.1 Terms of Reference

The aim of the study is to identify the cultural landscape (CL) elements of the proposed development area and to assess the impact of the proposed development on those elements. This report aims to assist the developer, South Africa Mainstream Renewable Power Developments (Pty) Ltd (hereafter referred to as "Mainstream"), in managing the identified cultural landscape elements in a responsible manner, to protect, conserve, and develop them within the framework provided for by the National Heritage Resources Act (25 of 1999) (NHRA).

## 1.2 Specialist Credentials

Emmylou Rabe Bailey, director of Hearth Heritage consultancy (est 2009), has over 15 years of experience in the heritage field, in the public and private sectors. Emmylou holds an MA in Archaeology and Heritage Conservation from the University of Leicester, UK (2008), specialising in the assessment, conservation and representation of archaeological resources and cultural landscapes. Emmylou is an Accredited Professional Heritage Practitioner and Executive Committee member with the Association of Professional Heritage Practitioners (APHP) and registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist. She also sits on Heritage Western Cape Council and the HWC Archaeology, Palaeontology and Meteorites Permitting Committee as well as the ICOMOS International Scientific Committees for Archaeological Heritage Management and Cultural Landscape as an Expert Member.

## 1.3 Assessment Methodology

### *1.3.1 Desktop analysis and literature review.*

- DFFE Screening Tool.
- Review of relevant Archaeological Impact Assessment (AIA), Heritage Impact Assessment (HIA), Visual Impact Assessment (VIA) and Socio-economic Impact Assessment reports (SEIA) on the proposed WEFs for the surrounding area as well as other relevant assessment reports from the surrounding area;

- Review of relevant academic literature and articles on cultural landscape assessment;
- Review of relevant academic literature and articles on the cultural heritage of the regional study area;
- Review of relevant policies and legislation on cultural landscapes assessment, scenic drives and route assessment and heritage assessment in EIA process;
- Review of historic and current maps of the study area and surrounds;
- Review of REDZs Strategic Environmental Assessment (SEA) reports (DEA, 2015); and
- Review of relevant international cultural landscapes best practice.

#### *1.3.2 Preliminary field survey*

The field survey of cultural landscape elements was conducted by a cultural landscapes specialist (archaeologist / anthropologist / heritage specialist) over 4 days from 17 – 20 January 2022 (summer). Survey was conducted in a vehicle on existing farm access roads and on foot where no vehicle access was possible. Cultural heritage resources and cultural landscape elements falling within and adjacent to the proposed development footprint were identified, mapped and photographed where appropriate. The season for fieldwork did not impact the research for this study.

#### *1.3.3 Recording*

Recording and documentation of relevant cultural heritage and cultural landscape elements, the assessment of resources in terms of the specialist requirements for CLA criteria, report writing, mapping and recommendations.

The significance of the cultural landscape is based on the examination of the

- processes (spatial pattern, land uses, response to natural features and cultural traditions);
- components (circulation, boundaries, vegetation, structural types, cluster arrangements, archaeological types, small-scale elements); and
- perceptual qualities (views and aesthetics), which are then utilized to identify and assess the relationships between the patterns of human use, the natural environment and cultural beliefs and attitudes.

Evaluation of provisionally identified heritage elements' significance according to World Heritage Convention Operational Guidelines (2017) and National Heritage Resources Act (NHRA) (Act 25 of 1999) as is required as part of the BA process.

### *1.3.4 Grading*

S.7(1) of the NHRA provides for the grading of heritage resources into those of National (Grade I), Provincial (Grade II) and Local (Grade III) significance. Grading is intended to allow for the identification of the appropriate level of management for any given heritage resource. Grade I and II resources are intended to be managed by the national and provincial heritage resources authorities respectively, while Grade III resources would be managed by the relevant local planning authority. These bodies are responsible for grading, but anyone may make recommendations for grading.

Heritage Western Cape (2016), uses a system in which resources of local significance are divided into Grade IIIA – high significance, Grade IIIB – medium significance and Grade IIIC - low local or contextual significance, with a Not Conservation Worthy (NCW) grading for sites of very low or no significance and generally not requiring mitigation or other interventions).

It should be noted that without further research and investigation of the intangible and living heritage found at the Karee and Patatskloof study site or surrounding area, a valuable and true assessment of the significance of the heritage resources and elements is not possible, and any grading assigned is subject to further work to confirm the proposed gradings. Notwithstanding, this report has drawn from other research to inform gradings and is confident that the proposed gradings herein have considered the most common significance assignments.

### *1.3.5 Sensitivity mapping for cultural landscapes (SEA, 2015)*

Landscape sensitivity was determined as part of this study through the identification of natural, scenic and cultural resources which have aesthetic, social and economic value to the local community, the region, and society as a whole. The resources considered include features of topographic, geological or cultural interest, together with landscape grain or complexity. Protected landscapes, such as national parks, nature reserves, game parks or game farms, as well as heritage sites, add to the cultural value of an area and were thus considered as essential criteria in the determination of landscape sensitivities. Landscape sensitivity was further determined by taking into account existing receptors in the area including settlements, national roads, arterial roads, scenic routes, and tourist destinations such as guest farms and resorts.

### *1.3.6 Community engagement*

Further research/ other studies beyond the brief of this BA would be required to determine the significance of the intangible or living heritage of the Patatskloof cultural landscape. The findings of this report must be shared with identified interested and affected parties in the EIA public participation process in order to further ascertain any intangible cultural resources that may exist on the landscape that have not been identified. Notably it is critical that any non-landowner residents on and surrounding the properties proposed for development also be included as I&APs in the process.

## 2. ASSUMPTIONS AND LIMITATIONS

Not detracting in any way from the comprehensiveness of the fieldwork and study undertaken, it is necessary to realise that the cultural landscape elements identified during fieldwork do not necessarily represent all the possible elements present in the area. Various factors account for this, including the layered histories associated with the area, specifically in terms of intangible and living heritage resources associated to the cultural landscape. Fieldwork was thorough enough for the purpose of this study, to pick up on the sense of place and character of the area, in order to assess impact of the development on the cultural landscape and propose mitigation measures.

The following identified assumptions should be noted:

- That the reports and information provided to Hearth Heritage by the client and EAP are true and correct at the time of submission.
- That the development infrastructure will be removed and rehabilitation of the landscape completed as per the EMPr for these developments in the decommissioning phase and not re-commissioned.
- That the status quo of the landscape was 'as usual' during the fieldwork period and that residents or labourers, stock or other relevant cultural elements were not altered for the survey period.

The following identified limitations should be noted:

- HIA studies with Cultural Landscape Assessments have been done in the Komsberg area and were consulted for information. Similarities to landscape character and elements in the region to other areas where CLA studies have been done, allowed for use of these studies in analysis and recommendations for development in this report (Jansen and Franklin, 2020).
- No stakeholder participation was conducted to determine intangible or living heritage resources

for the purposes of the cultural landscape assessment.

- No proposed WEF road layout was included in the proposal documents received by the specialist, as such road layouts of not independently been assessed for impact to cultural landscapes. Notwithstanding, the no-go areas identified in this specialist report considers all development possibilities and will suffice for road layout assessment also.
- Due to the historical layering of the landscape and associated history and memory of conflict, dispossession and disempowerment, the values attributed to the landscape and heritage resources are varied and do not necessarily align to give a definitive single significance to the site. Perceptions of sense of place vary over time and place and from one individual to the next depending on their relationship to the landscape and the proposed development. Without a detailed and extensive consultation process with all potential stakeholders, including non-landowners (labourers, tourists, youth), the full significance of the cultural landscape and impact of the proposed development on it, cannot be accurately determined. The depth and complexity of values assigned to heritage resources in this landscape is beyond the scope of this report for the BAR, but should be further developed in the EIA process through stakeholder engagement by qualified heritage specialists to determine the full impact of the proposed development on the cultural landscape and inform mitigation accordingly.
- At the time of undertaking the visual study no information was available regarding the type and intensity of lighting that will be required for the proposed WEF and therefore the potential impact of lighting at night was not assessed at a detailed level. However, lighting requirements are relatively similar for all WEFs and as such, general measures to mitigate the impact of additional light sources on the ambiance of the nightscape were provided in the VIA (Schwartz, 2021).

# 3. TECHNICAL DESCRIPTION

## 3.1 Project Location

The proposed WEF and associated grid infrastructure is located approximately 18km and 25km north-east respectively of Touws River in the Western Cape Province and is within the Witzenberg Local Municipality, in the Cape Winelands District Municipality. (Figure *2*).

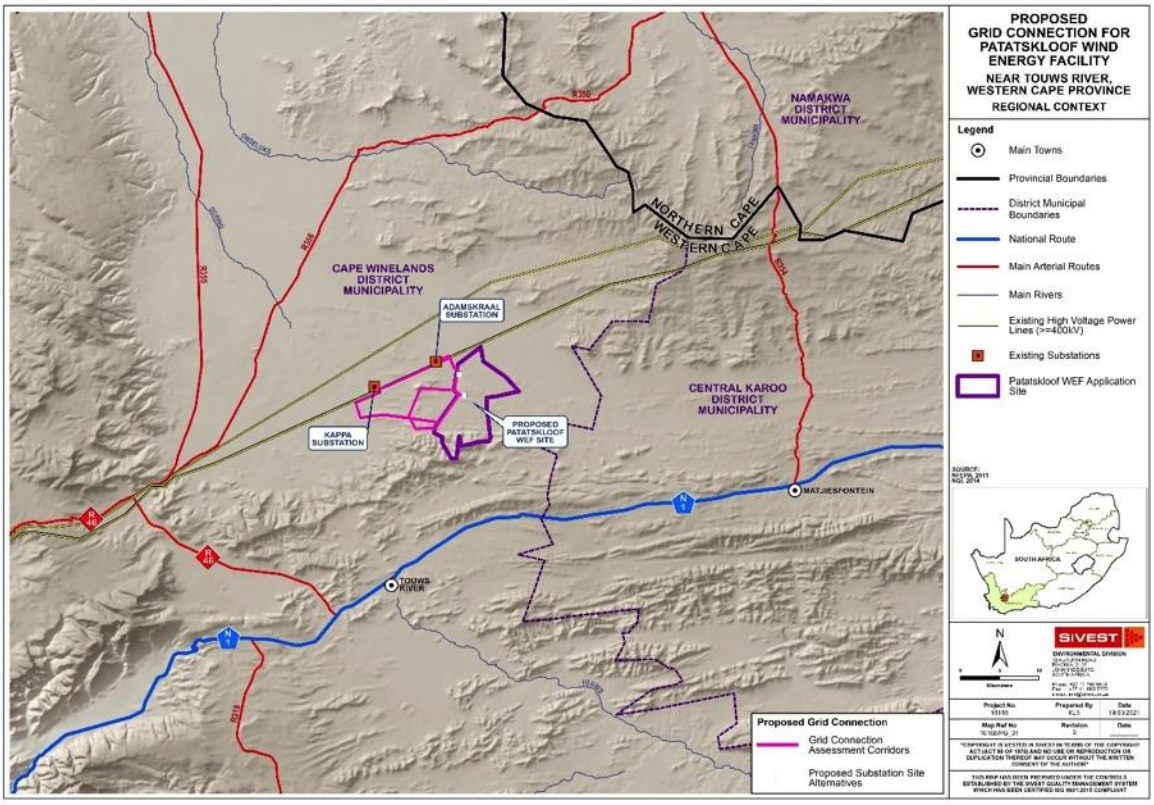


Figure 2: Regional Context Map

*3.1.1 WEF*

The WEF application site as shown on the locality map below (Figure 3) is approximately 6 612 hectares (ha) in extent and incorporates the following farm portions:

- Remainder of the Farm Upper Stinkfontein No 246
- Remainder of the Farm Upper Melkbosch Kraal No 250; and
- Portion 1 of the Farm Drinkwaters Kloof No 251.

A smaller buildable area (2 905.4 ha) has however been identified as a result of a preliminary suitability assessment undertaken by Mainstream and this area is likely to be further refined with the exclusion of sensitive areas determined through various specialist studies being conducted as part of the BA process.

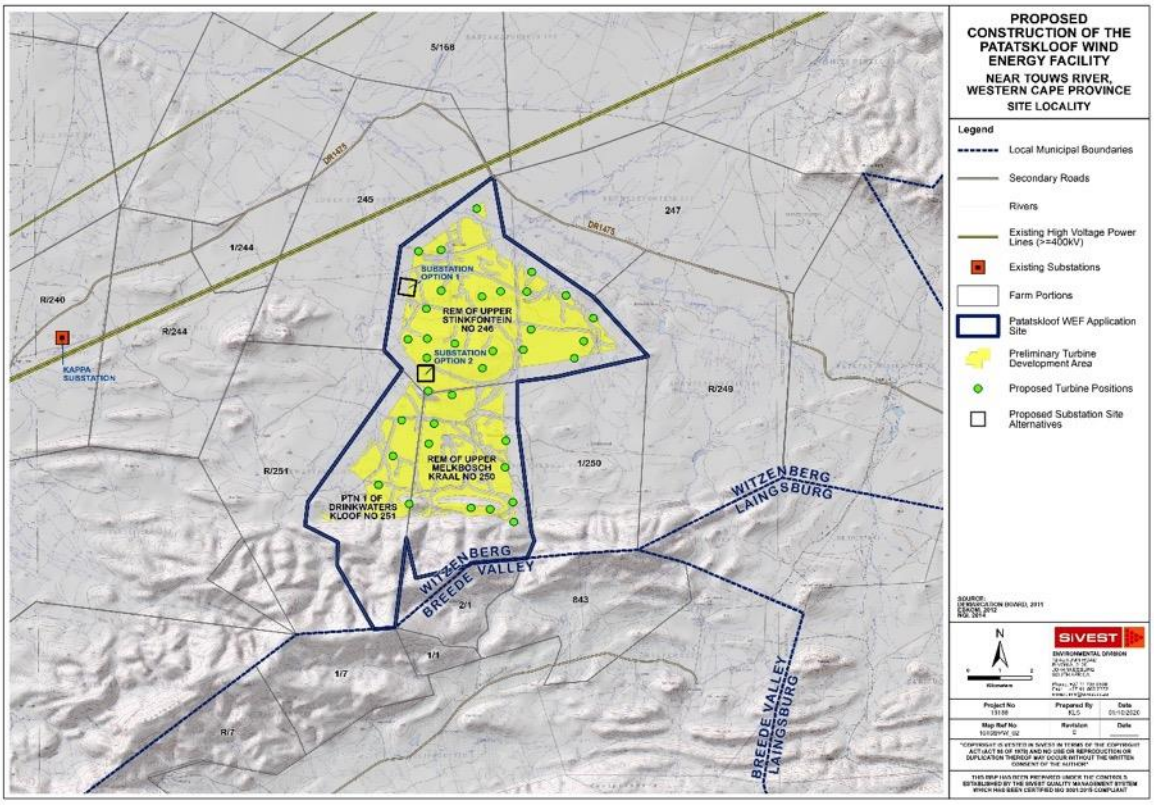


Figure 3: Patatskloof WEF Site Locality

### *3.1.2 Grid Connection*

At this stage, it is proposed that the 132kV power lines will connect the Pataskloof WEF on-site substation to the national grid, either via Kappa Substation or via the Adamskraal substation (Figure *3*).

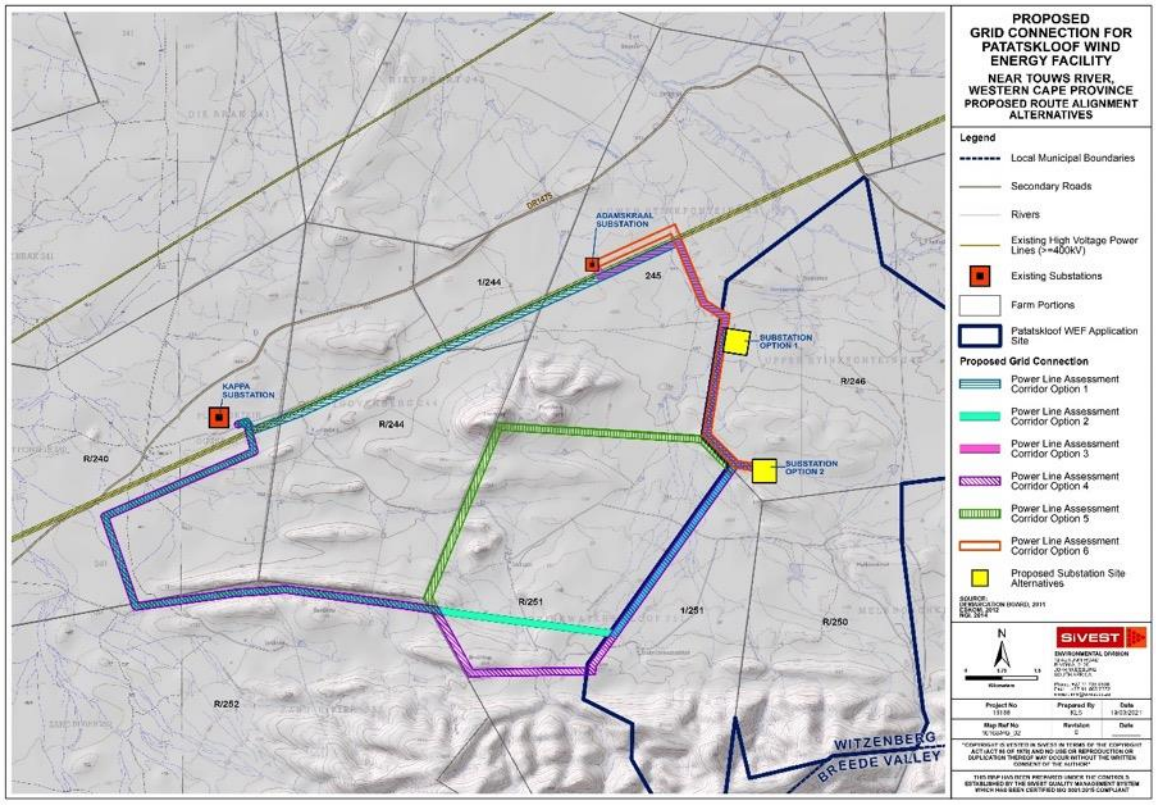


Figure 4: Proposed 132kV Power Line Route Alignment

## 3.2 Project Description

### *3.2.1 Wind Farm Components*

At this stage it is anticipated that the proposed Patatskloof WEF will comprise up to thirty-five (35) wind turbines with a maximum total energy generation capacity of up to approximately 250MW. The electricity generated by the proposed WEF development will be fed into the national grid via a 132kV overhead power line. The 132kV overhead power line will however require a separate EA and is subject to a separate BA process, which is currently being undertaken in parallel to the WEF BA process. In summary, the proposed Patatskloof WEF will include the following components:

- Up to 35 wind turbines, each between 4MW and 6.6MW, with a maximum export capacity of approximately 250MW. This will be subject to allowable limits in terms of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). The final number of turbines and layout of the WEF will, however, be dependent on the outcome of the Specialist Studies conducted during the BA process;

- Each wind turbine will have a hub height of between 120m and 200m and rotor diameter of up to approximately 200m;
- Permanent compacted hardstanding areas / platforms (also known as crane pads) of approximately 100m x 100m (total footprint of approx. 100 00m2) per turbine during construction and for on-going maintenance purposes for the lifetime of the proposed development;
- Each wind turbine will consist of a foundation of up to approximately 30m in diameter. In addition, the foundations will be up to approximately 4m in depth;
- Electrical transformers (690V/11 to 33kV) adjacent to each wind turbine (typical footprint of up to approximately 3m x 2.5m) to step up the voltage to between 11kV and 33kV;
- One (1) new 11kV - 33/132kV on-site substation including associated equipment and infrastructure, occupying an area of approximately 2ha (i.e. 20 000m2). The proposed substation will be a step-up substation and will include an Eskom portion and an IPP portion, hence the substation has been included in the WEF BA and in the grid infrastructure (substation and 132kV overhead power line) BA to allow for handover to Eskom. Following construction, the substation will be owned and managed by Eskom. The current applicant will retain control of the low voltage components (i.e. 33kV components) of the substation, while the high voltage components (i.e. 132kV components) of this substation will be ceded to Eskom shortly after the completion of construction;
- A Battery Energy Storage System (BESS) will be located next to the onsite 33/132kV substation to be included in the 2ha substation area. The storage capacity and type of technology would be determined at a later stage during the development phase, but most likely comprise an array of containers, outdoor cabinets and/or storage tanks;
- The wind turbines will be connected to the proposed substation via 11 to 33kV underground cabling and overhead power lines.
- Road servitude of 8m and a 20m underground cable or overhead line servitude.
- Internal roads with a width of up to approximately 5m wide will provide access to each wind turbine. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary. Turns will have a radius of up to 50m for abnormal loads (especially turbine blades) to access the various wind turbine positions. It should be noted that the proposed application site will be accessed via the N1 National Route and DR1475, MR316 and MR319 WCG provincial Roads; One (1) construction laydown / staging area of up to approximately 3ha to be located on the site identified for the substation. It should be noted that no construction camps will be required in order to house workers overnight as all workers will be accommodated in the nearby town;
- Operation and Maintenance (O&M) buildings, including offices, a guard house, operational control centre, O&M area / warehouse / workshop and ablution facilities to be located on the site identified for the substation. This will be included in the 2 ha substation area.
- A wind measuring lattice (approximately 120m in height) mast has already been strategically placed within the wind farm application site in order to collect data on wind conditions;
- No new fencing is envisaged at this stage. Current fencing is standard farm fence approximately 1-1.5m in height. Fencing might be upgraded (if required) to be up to approximately 2m in height; and

- Water will either be sourced from existing boreholes located within the application site or will be trucked in, should the boreholes located within the application site be limited.
- Optic fibre overhead or underground line from the Adamskraal Substation to the proposed on-site substation.

### *3.2.2 Grid Components*

The proposed grid connection infrastructure to serve the Patatskloof WEF will include the following components:

- One (1) new 11-33/132kV on-site substation, situated on a site of occupying an area of up to approximately 2ha. The proposed substation will be a step-up substation and will include an Eskom portion and an IPP portion; hence the substation has been included in both the BA for the WEF and in the BA for the grid infrastructure to allow for handover to Eskom. The applicant will remain in control of the low voltage components (i.e. 33kV components) of the substation, while the high voltage components (i.e. 132kV components) of this substation will likely be ceded to Eskom shortly after the completion of construction; and
- One (1) new 132kV overhead power line connecting the on-site substation to either Kappa Substation or Adamskraal Substation and thereby feeding the electricity into the national grid. Power line towers being considered for this development include self-supporting suspension monopole structures for relatively straight sections of the line and angle strain towers where the route alignment bends to a significant degree. Maximum tower height is expected to be approximately 25m.

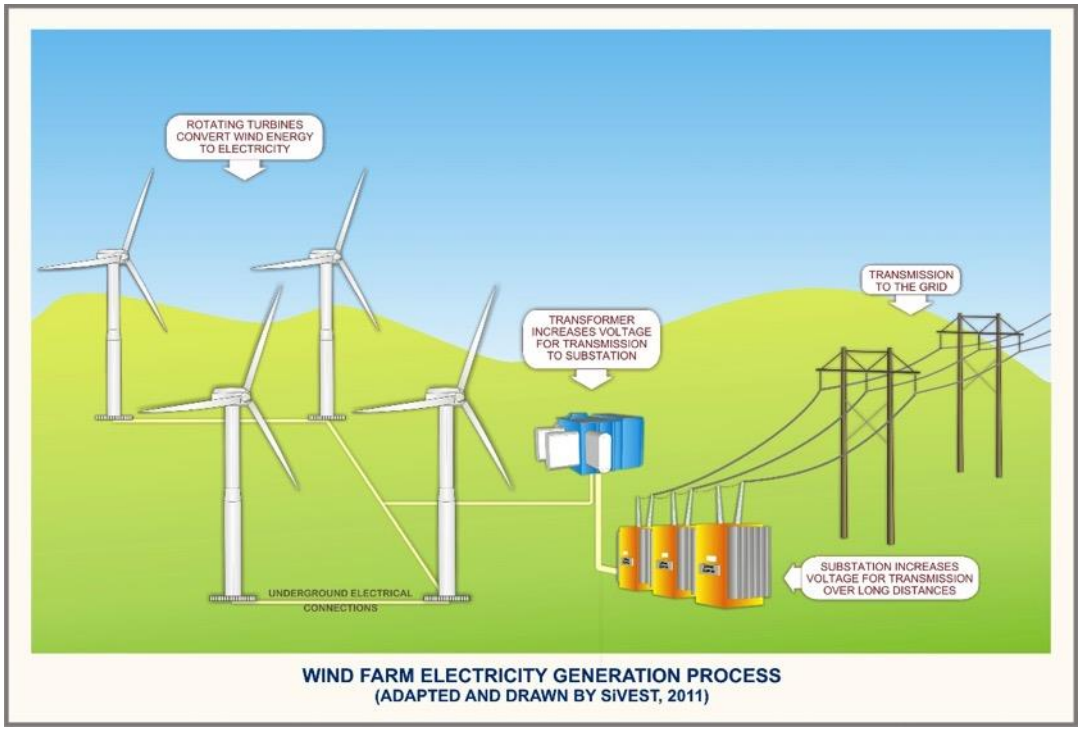


*Figure 5: Conceptual WEF electricity generation process showing electrical connections (VIA, 2021)*

## 3.3 WEF BA alternatives

### *3.3.1 Location alternatives*

No other activity alternatives are being considered. Renewable Energy development in South Africa is highly desirable from a social, environmental and development point of view and a wind energy installation is more suitable for this site due to the high wind resource.

### *3.3.2 Technology alternatives*

The choice of technology selected for the Patatskloof WEF is based on environmental constraints and technical and economic considerations. No other technology alternatives are being considered as wind energy facilities are more suitable for the site than other forms of renewable energy due to the high wind resource.

The size of the wind turbines will depend on the development area and the total generation capacity that can be produced as a result. The choice of turbine to be used will ultimately be determined by technological and economic factors at a later stage.

### *3.3.3 Layout Alternative*

Design and layout alternatives will be considered and assessed as part of the BA. These include alternatives for the Substation locations and also for the construction / laydown area on the same site as the substation.

### *3.3.4 No-go Alternative*

The 'no-go' alternative is the option of not undertaking the proposed WEF and / or grid connection infrastructure projects. Hence, if the 'no-go' option is implemented, there would be no development. This alternative would result in no environmental impacts from the proposed project on the site or surrounding local area. It provides the baseline against which other alternatives are compared and will be considered throughout the report.

## 3.4 Grid BA alternatives

The grid connection infrastructure proposals include two (2) substation site alternatives, each of which are 25 hectares in extent, and six (6) power line route alignment alternatives. These alternatives will be considered and assessed as part of the BA process and will be amended or refined to avoid identified environmental sensitivities.

### *3.4.1 Route Alternative*

All power line route alignments will be assessed within a 150m wide assessment corridor (75m on either side of power line). These alternatives are described below:

- Power Line Corridor Option 1 is approximately 16km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation.
- Power Line Corridor Option 2 is approximately 24km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation.
- Power Line Corridor Option 3 is approximately 8km in length, linking either Substation Option 1 or Substation Option 2 to Adamskraal Substation.
- Power Line Corridor Option 4 is approximately 25km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation.
- Power Line Corridor Option 5 is approximately 24km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation. It should be noted that the assessment corridor applied to a short section of this route alignment serving Substation Option 2 has been widened to 300m.
- Power Line Corridor Option 6 is approximately 8km in length, linking either Substation Option 1 or Substation Option 2 to Adamskraal Substation.

### *3.4.2 No-go Alternative*

The 'no-go' alternative is the option of not undertaking the proposed grid connection infrastructure projects. Hence, if the 'no-go' option is implemented, there would be no development. This alternative would result in no environmental impacts from the proposed project on the site or surrounding local area. It provides the baseline against which other alternatives are compared and will be considered throughout the report.

# 4. LEGAL REQUIREMENTS AND GUIDELINES

## 4.1 STATUTORY FRAMEWORK: National Heritage Resources Act (25 of 1999)

The NHRA is utilised as the basis for the identification, evaluation and management of heritage resources and in the case of Cultural Resources Management those resources specifically impacted on by development as stipulated in Section 38 of NHRA. This study falls under s38(8) and requires comment from the relevant heritage resources authority, Heritage Western Cape Provincial Heritage Authority.

The identification and evaluation of cultural landscapes for this Basic Assessment Report (BAR) has been conducted according to the NHRA. While landscapes with cultural significance do not have a dedicated Section in the NHRA, they are protected under the definition of the National Estate (Section 3). Section 3(2)(c) and (d) list "historical settlements and townscapes" and "landscapes and natural features of cultural significance" as part of the National Estate. Furthermore, some of the points in Section 3(3) speak directly to cultural landscapes.

Section 38(8) of the NHRA states that if an impact assessment is required under any legislation other than the NHRA then it must include a heritage component that satisfies the requirements of S.38(3). Furthermore, the comments of the relevant heritage authority must be sought and considered by the consenting authority prior to the issuing of a decision. Under the National Environmental Management Act (No. 107 of 1998), as amended (NEMA), the project is subject to a BA. The present report provides the cultural landscapes assessment component. Heritage Western Cape is required to provide comment on the proposed project in order to facilitate final decision making by the DEA. The relevant sections of legislation are included here to emphasize the detail and definitions on what qualifies as cultural landscapes, intangible heritage and living heritage.

#### *4.1.1 NHRA definitions of terms applicable to assessment of cultural landscape:*

Heritage resources are protected under the NHRA. As part of this assessment, resources were, as far as possible, assigned sensitivity ratings according to Section 3(3) of this act, which provides a guideline for evaluating the cultural significance of heritage resources according to the following criteria:

(a) its importance in the community or pattern of South Africa's history;

(b) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;

(c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;

(d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;

(e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;

(f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;

(g) its strong or special association with a particular community or cultural group for social cultural or spiritual reasons;

(h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and

(i) sites of significance relating to the history of slavery in South Africa.

Cultural heritage values (significance) as outlined in the NHRA, refers to qualities and attributes possessed by places or objects: these values can be aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance; for the past, present and future generations. These values may manifest themselves in places and physical features but can also be associated with intangible qualities such as people's associations with or feelings for a place or item or other elements such as cultural practices, knowledge, songs, legends and stories.

#### *4.1.2 Cultural Heritage Survey Guidelines and Assessment Tools for Protected Areas in South Africa, May 2017 (Gazetted Dec 2017)*

This guide is meant for those who work in Protected Areas and manage cultural heritage resources. The guide should be used together with the National Heritage Resource Act, 1999 (Act No 25 of 1999) (NHRA), the National Environmental Management Act: Protected Areas Act, 2003 (Act No. 57 of 2003), the South African Heritage Resources Agency (SAHRA) and Provincial Heritage Resources Agency (PHRA) Guidelines on Norms and Standards. In lieu of minimum standards guidelines for cultural landscapes assessment

specifically in South African legislation, the CHG offers cultural heritage survey guidelines and assessment tools that can be used for the purposes of CLA's in the EIA process.

Tools for inventories of different categories of cultural heritage resources

- Intangible Cultural Heritage
  - Types: a) Elements of folklore and traditional crafts
    b) Elements of oral tradition
- Cultural Landscapes
  - Characteristics: a) processes – spatial pattern, land uses, response to natural features and cultural traditions
    b) components – circulation, boundaries, vegetation, structural types, cluster arrangements, archaeological types, small-scale elements
    c) perceptual qualities – views and aesthetics

## 4.2 Spatial Development Frameworks and Heritage Surveys

The Western Cape Provincial Government: Heritage and Scenic resources: Inventory and Policy Framework for the Western Cape, September 2014 Version 5 by Winter & Oberholzer, identifies and grades the scenic resources within the Western Cape. The aim of the framework study was so that cultural and scenic resources of significance could be identified and rated so that they could be included in all Spatial Development Frameworks (SDF's) in order to avoid inappropriate planning applications. The Winter & Oberholzer (2014) study focuses on the regional level.

## 4.3 Scenic Routes

A scenic route is usually a public street designated as a scenic drive by a governing body in recognition of the high visual amenity alongside that public street, including background vistas of a mountain, open country, a coastline or a town; usually in the form of a scenic drive, but which could also be a railway, hiking trail, horse-riding trail or 4x4 trail. Although not directly stipulated in the NHRA, "scenic routes" are considered as a category of heritage resource in the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) Guidelines for involving heritage specialists in the EIA process, and Baumann and Winter (2005) comment that the visual intrusion of development on a scenic route should be considered a heritage issue.

## 4.4 World Heritage Convention

The United Nations Educational, Scientific and Cultural Organization (UNESCO) Operational Guidelines for the World Heritage Convention (2017) define Cultural Landscapes as:

Cultural properties that represent the "combined works of nature and of man". They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal. Cultural landscapes should be selected based on their representation in terms of a clearly defined geo-cultural region and also for their capacity to illustrate the essential and distinct elements of such regions. Cultural landscapes often reflect the specific techniques of sustainable land use, considering the characteristics and limits of the natural environment they are established in, and a specific spiritual relation to nature.

Cultural landscapes fall into three main categories, namely:
(i) The most easily identifiable is the clearly defined landscape designed and created intentionally by man. This embraces garden and parkland landscapes constructed for aesthetic reasons which are often (but not always) associated with religious or other monumental buildings and ensembles.
(ii) The second category is the organically evolved landscape. This results from an initial social, economic, administrative, and/or religious imperative and has developed its present form by association with and in response to its natural environment. Such landscapes reflect that process of evolution in their form and component features. They fall into two sub-categories:
- a relict (or fossil) landscape is one in which an evolutionary process came to an end at some time in the past, either abruptly or over a period. Its significant distinguishing features are, however, still visible in material form.
- a continuing landscape is one which retains an active social role in contemporary society closely associated with the traditional way of life, and in which the evolutionary process is still in progress. At the same time, it exhibits significant material evidence of its evolution over time.
(iii) The final category is the associative cultural landscape. The inscription of such landscapes on the World Heritage List is justifiable by the powerful religious, artistic or cultural associations of the natural element rather than material cultural evidence, which may be insignificant or even absent.

## 5. RENEWABLE ENERGY AND CULTURAL LANDSCAPES

While it is recognised that renewable energy is required to address the effects of climate change and has the potential to contribute to socio-economic development in rural areas, wind and solar photovoltaic (PV) facilities must be sited and designed in a manner that minimises the impact on South Africa's rich cultural resources and landscapes. Renewable energy facilities, including supporting infrastructure such as power lines, can be perceived as industrial structures, which have the potential to impact negatively on sensitive landscapes. The natural and cultural landscape characteristics generally encompass visual, scenic, aesthetic and amenity values, which contribute to the overall 'sense of place' of an area. Wind turbines in particular are tall structures that can be visible from long distances and have a high potential to impact on landscapes and visual resources. According to the Scottish Natural Heritage Guideline[1] the visual impact of a wind farm depends on the distance from which it is viewed, weather conditions, turbine siting and the landscape context. Several guidance documents have provided generic categories for the degrees of visibility and visual impact related to distance. Table 1 was adapted from the Scottish Planning Advice Note 452 and offers general guidance on the effect of distance on the perception of a wind farm in an open landscape. Although the document does not clearly specify the turbine size this table refers to, the document mentions turbines with tower heights of more than 70 metres (m) and rotor diameters of more than 80 m. Turbines have since increased in size and can now reach hub heights of 120 and rotor diameters of 130 m, resulting in a wind farm in some conditions being visible from a distance of up to 50 kilometres (km) away. Even though the below table considers smaller turbines than what is generally proposed in South Africa, it still places the potential visual impacts of wind farms into perspective. The cumulative impacts of renewable energy development on the landscape are of specific concern. According to the Scottish Natural Heritage Guideline, cumulative impacts may be perceived when more than one facility is visible from one viewpoint, when several facilities are seen during a single journey, and when there is a gradual increase in the number or size of facilities over time.

*Table 1: General perception of wind farm in an open landscape (Scottish Planning Advice Note 45: Renewable Energy Technologies)*

| Distance from turbine | Perception |
|---|---|
| <2 km | Likely to be a prominent feature |
| 2 – 5 km | Relative prominence |
| 5 – 10 km | Only prominent in clear visibility – seen as part of the wider landscape |

[1] Scottish Natural Heritage (2014) Siting and Designing Wind Farms in the Landscape. Available from: http://www.snh.org.uk/pdfs/strategy/renewables/Guidance_Siting_Designing_wind_farms.pdf

| | |
|---|---|
| 15 – 30 km | Only seen in very clear visibility – a minor element in the landscape |

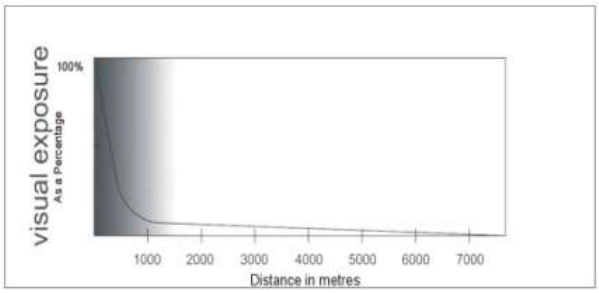


*Figure 6: The rate at which the visual impact of an object diminishes over distance.*

## 6. CULTURAL LANDSCAPES AS CONCEPT

At its core the concept of cultural landscapes unites the products of 'natural' ecological processes and the products emerging from the processes of transformation of the 'natural' site by people in constructing their 'built' world (Jansen and Franklin, 2020). Cultural landscapes can be interpreted as complex and rich extended historical records conceptualised as organisations of space, time, meaning, and communication moulded through cultural process. The connections between landscape and identity and, hence, memory are fundamental to the understanding of landscape and human sense of place. Cultural landscapes are the interface of culture and nature, tangible and intangible heritage, and biological and cultural diversity. They represent a closely woven net of relationships, the essence of culture and people's identity. They are symbolic of the growing recognition of the fundamental links between local communities and their heritage, human kind, and its natural environment. In contemporary society, particular landscapes can be understood by taking into consideration the way in which they have been settled and modified including overall spatial organisation, settlement patterns, land uses, circulation networks, field layout, fencing, buildings, topography, vegetation, and structures. The dynamic and complex nature of cultural landscapes can be regarded as text, written and read by individuals and groups for very different purposes and with very many interpretations. The messages embedded in the landscape can be read as signs about values, beliefs, and practices from various perspectives. Most cultural landscapes are living landscapes where changes over time result in a montage effect or series of layers, each layer able to tell the human story and relationships between people and the natural processes.

The significance of the landscape reflects not just the sum of the individual parts, but rather landscapes as an integral whole. It is the nature of the relationship between features, and between these features and

the broader landscape setting (context) that is important. What is also important is an understanding about how these landscapes have been produced. In other words, it is essential that the physical informants and historical events that have given structure and form to the landscape features are understood and appropriately interpreted with regard to heritage significance (Jansen and Franklin, 2020).

# 7. DESCRIPTION OF THE RECEIVING ENVIRONMENT

## 7.1 THE REGIONAL CERES KAROO CULTURAL LANDSCAPE

The proposed Pataskloof Wind Energy Facility is located in the Komsberg REDZ, approximately 18km north-east of Touws River in the Western Cape Province and is within the Witzenberg Local Municipality, in the Cape Winelands District Municipality. It is located in a topographic 'bowl' with the Koedoesberge to the north, the Bonteberg ridge to the south and the distinct Tooverberg and Pramberg to the west.

The Ceres Karoo landscape is a semi-arid region, with rainfall mainly in the form of summer thunderstorms in recent years, some snow and precipitation in winter. The vegetation is characteristic of the Succulent Karoo biome, low succulent shrub dotted by scattered tall shrubs, patches of 'white' grass visible on the plains, the most conspicuous dominants being dwarf shrubs (Mucina & Rutherford, 2006). The area is characterised by a series of very high and long ridges with valleys in-between.

The area is sparsely populated with a few farmsteads and their associated structures located on the valley floors, usually adjacent to water courses and linked by a series of crisscrossing farm tracks and historic roads that are material remains of the important connections and linkages between the people travelling across the vast landscape and living isolated lives. Sites of habitation are usually layered in their historic signature, with various periods of habitation evident on the same site over time, such as stone age sites (rock art and localised stone age scatter) farmsteads, stone kraals with their herder's cottages and more recent 20$^{th}$ century associated farm structures (sheds and seasonal labourers residence) and tourist cottages. The names of places and farms are testament to the relationship between man and nature, with illustrative Afrikaans and Dutch names describing the interpretation and representation of the area by the first European settlers to the region. Given the form of the indigenous vegetation, clusters of tall trees are indicative of human transformation and usually habitation. A lack of tall woody species and therefore suitable timber products in the area, pre-necessitated the use of stone, which can be found in abundance, for the construction of buildings and kraals. Stone is also used in other elements such as road markers and fence anchors. Many farm buildings and their associated agricultural structures in the area contain

elements greater than 60 years of age and fall with the general protection of the NHRA. The history of the area is one of contact, conflict and survival and is an example of a long history of symbiotic relationship between man and nature (Bailey, 2020).

Sheep, cattle and other livestock farms exist alongside game farms and other game reserve areas populated with game species. The reintroduction of wildlife into the landscape through nature and game reserves echoes place names on historic maps, which testify to these species dominating the landscape in the past. Previous agricultural activities have been replaced and/ or supported by conservation and game initiatives aimed at the tourist market, relying on the wilderness sense of place. The result is a landscape with an overwhelmingly rural and natural sense of place, wide open spaces and distant vistas of surrounding mountain horizons, recalling the historic landscape of conflict, survival and conquest, criss-crossed with wire fencing demarcating parcels of custodianship of people over the land and its inhabitants.

The historic R356 which runs from Karoopoort through the Ceres Karoo on towards Sutherland is evident in most historic maps and the subject of a well-known non-fiction book, The Forgotten Highway to the North (Mossop, 1927). Along this historic route, travellers experience the vastness and dramatic sense of place of the surrounding area that has long been the subject of romantic explorers' descriptions, as well as the low saddles and water courses that have been crossed by people with various plans and motives over centuries. This alignment is significant to understand the greater context of the study area, since Karoopoort formed part of a system of outspans that functioned as an area of rest in the journey towards the north. The route and poort were also used as a thoroughfare of herds of bovids, as a means to travel between two biomes in order to benefit from different pastures, and hunting grounds to the north.

Jansen et al (2020) notes that outspan areas form a significant feature in the Karoo as they are not only important to understand in terms of heritage, but also in terms of existing active use within the current cultural landscape, in the form of living heritage or the potential for an active use to be enhanced. The system of outspan areas are possibly still actively used by the sheep-shearers of the Great Karoo that are known and acknowledged as the *karretjiemense* (Donkey Cart People), descendants of the indigenous inhabitants of the area. There are several farm tracks which cross the study area, including historic roads which portered people from the Cape to Laingsburg and beyond, others service fenced stock camps and associated small dams and their accompanying wind pumps and solar panels.

The area in which the study area is located has had various names over time and discipline, with shifting borders depending on the political, social, natural climate of the time. It is in an area that has, as its

constant cultural landscape characteristic, flux and change, movement and transference. The interaction between the topography, geology, flora and historical remnants of human occupation of the area form a unique cultural landscape that is likely to be negatively impacted by the proposed development (Hart et al, 2016).

The Komsberg region is a significant cultural landscape that reflects the relationship between man and nature over a period of time. This relationship has generally been sustainable, where biodiversity and ecological systems have been maintained in the utilisation of the landscape expressed in specific land use patterns. The surrounding land use indicates a social appreciation of the natural environment with low impact stock and game farming with limited farmstead crop cultivation. The vastness of the cultural landscape is, however, often undervalued. If careful contextual planning is not followed, it will rapidly result in a cluttered wasteland. This does not mean that development is discouraged, but rather that the implementation of wind and solar energy farms should be planned holistically. It is the duty of the planning department to consider this application in terms of other renewable energy developments that are planned/proposed for the Komsberg area, notably the proposed RE developments included in the cumulative impact section of this report.

*Figure 4: Regional landscape with Tooverberg on the horizon and typical stone fencing and farm track in foreground.*

## 7.2 REGIONAL RENEWABLE ENERGY DEVELOPMENT

The area is located within the SEA identified Komsberg REDZ**.** Currently there are two operational renewable energy facilities in the area, Perdekraal WEFs East and West, and there are at least eight more approved applications for both wind and solar energy developments within a 35km radius from the Patatskloof WEF application site. Various electric grid connections and transmission lines are currently in operation along the historic gravel road including the Kappa Substation. This industrial infrastructure has heavily altered the historically significant cultural landscape and sense of place and is threatening to turn the area in to a cluttered industrial wasteland if considered development, which takes heed of relevant recommendations, is not supported and promoted by the relevant decision makers.

Note that NOT all proposed RE development applications, 'in process' or 'approved', have been included in the following maps and tables for regional RE development, and updated maps and tables to include, at least the proposed Pienaarspoort 1 and 2 WEF developments, are awaited.

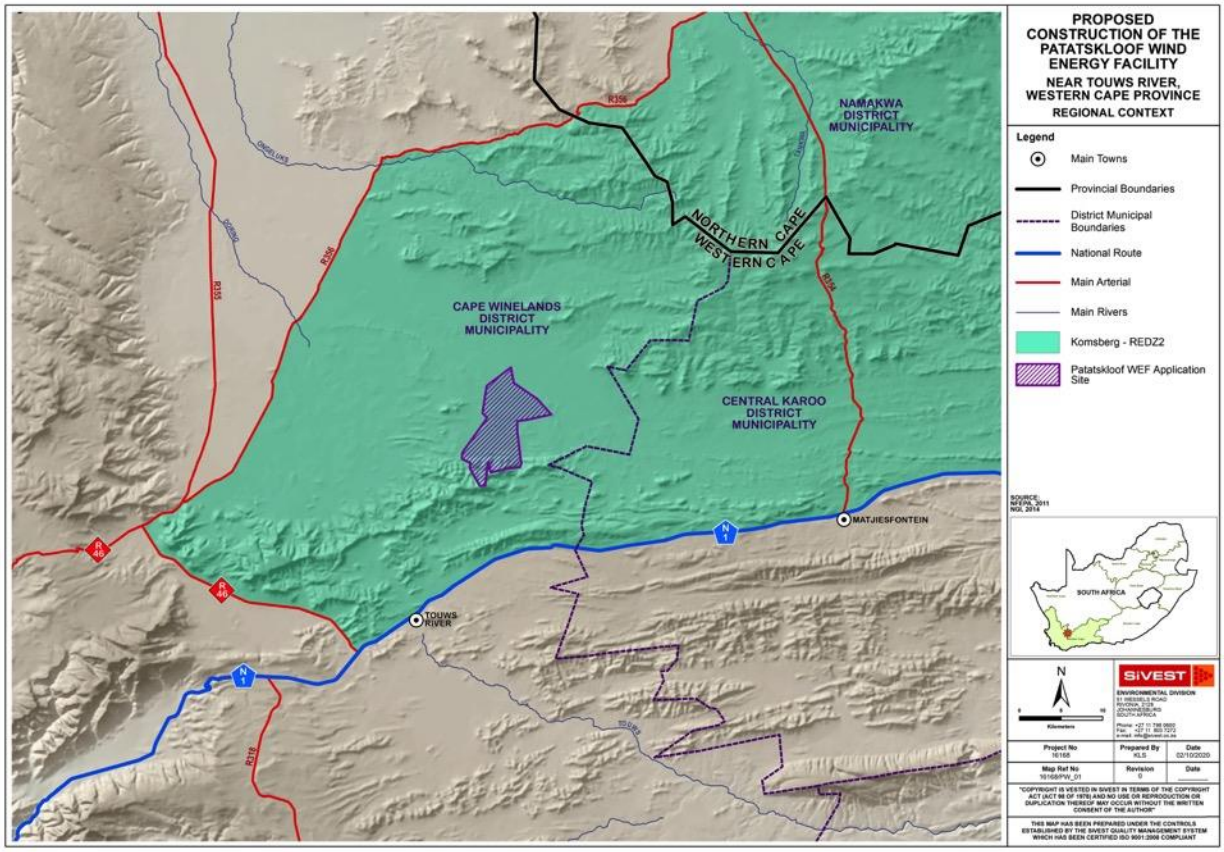


*Table 2: Existing and Proposed Renewable Energy Projects within 35km of Site*

| Applicant | Project | Technology | Capacity | Status of Application / Development |
|---|---|---|---|---|
| Oya Energy (Pty) Ltd | Oya Energy Facility | Hybrid (Solar / Fuel-Based) | 305MW | EIA Process underway |
| Brandvalley Wind Farm (Pty) Ltd | Brandvalley WEF | Wind | 140MW | Approved |
| Kudusberg Wind Farm (Pty) Ltd | Kudusberg WEF | Wind | 325W | Approved |
| South Africa Mainstream Renewable Power Perdekraal West (Pty) Ltd | Perdekraal West WEF & Associated Grid Connection Infrastructure | Wind | 150M | Approved |
| South Africa Mainstream Renewable Power Perdekraal East (Pty) Ltd | Perdekraal East WEF & Associated Grid Connection Infrastructure | Wind | 110MW | Operational |
| South Africa Mainstream Renewable Power Developments (Pty) Ltd | Karee WEF | Wind | 200MW | EIA Process underway |

| | | | | |
|---|---|---|---|---|
| Rietkloof Wind Farm (Pty) Ltd | Rietkloof WEF | Wind | 186MW | Approved |
| ENERTRAG SA (Pty) Ltd | Tooverberg WEF & Associated Grid Connection Infrastructure | Wind | 140MW | Approved |
| Witberg Wind Power (Pty) Ltd | Witberg WEF | Wind | 120MW | Approved |
| Montgue Road Solar (Pty) Ltd | Montague Road Solar | Solar PV | 75MW | Approved |
| Touwsrivier Solar | Touwsrivier Solar | Solar PV | 36MW | Approved |

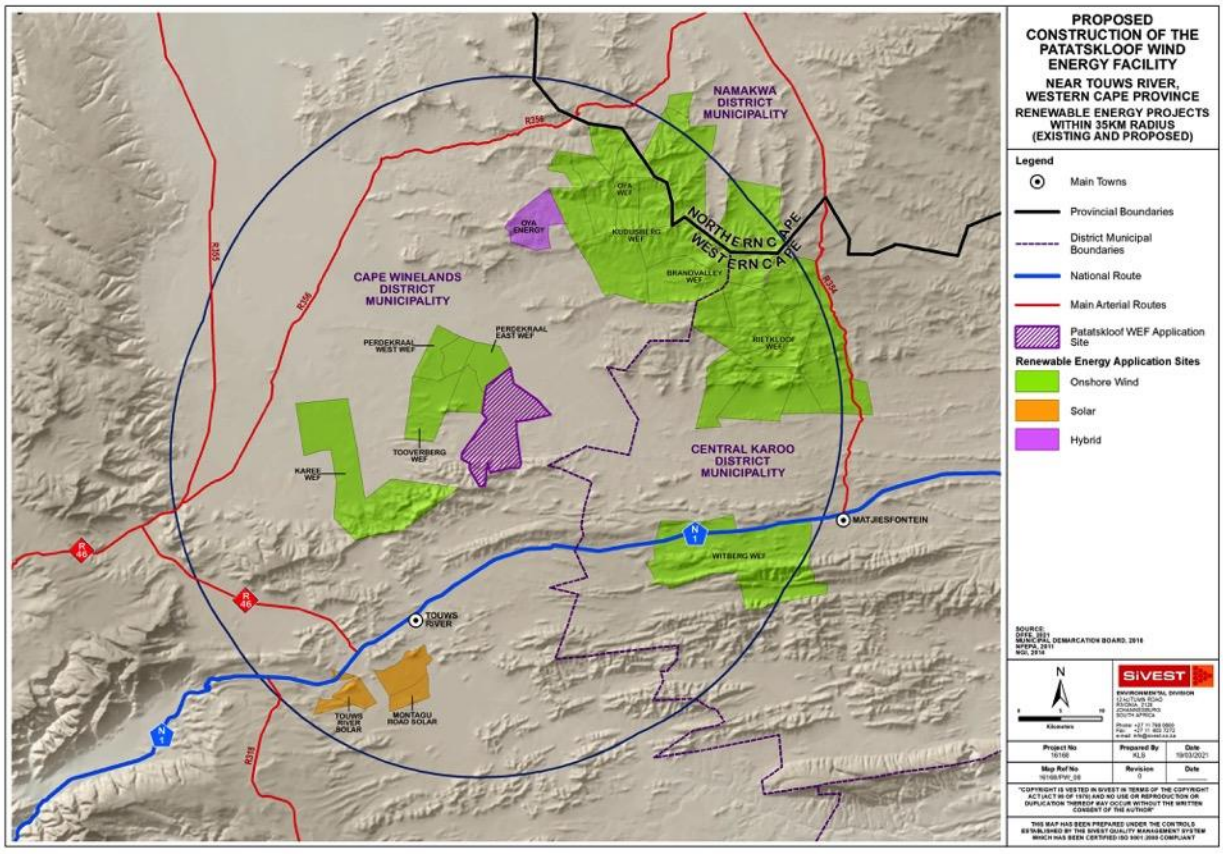


*Figure 7: Renewable energy application sites in process in the surrounding area. (some RE development application sites are outstanding)*

It must be noted that the focus of heritage studies in the area has been on the material and tangible aspects of the landscape as identified in the NHRA. Cultural landscape assessments would ideally include consideration of intangible heritage associated to the tangible resources identified and a public participation process dealing with issues regarding inter alia intangible heritage, indigenous knowledge systems, oral histories, language and lifeways of the people who inhabit and use the landscape.

# 8. HISTORICAL BACKGROUND TO THE REGION

Located between the Tankwa and Moordenaarskaroo, north of the Bonteberg, south of the Koedoesberg, this region of the Karoo is situated in the vast flat plains between the mountains with remnant koppies, such the Tooverberg, Pramberg, Perdeberg and Hangklip, the iconic features of the landscape. Despite the low rainfall and paucity of water typical of this region, the area once supported large grassy flatlands, and indigenous pastoralist and hunter-gatherer groups migrated across the region in a transhumant pattern according to seasonal climate changes in order to hunt game or to graze their livestock. The routes and poorts in the region have been used as a thoroughfare of herds of bovids, as a means to travel between two biomes in order to benefit from different pastures, and hunting grounds to the north for millennia.

The first European settlers, the trekboers, moved inland from the Cape in the early 1700s, as arable land closer to Cape Town became scarce and to escape the perceived overbearing control of the Dutch landdrosts. The first official land grants, '*legplaatse*' had to be large enough to support stock farming (mostly sheep) within this semi-arid region. As a result, the area remained sparsely populated, although it hosted parties of hunters who moved through the region periodically in search of big game as well as travellers on their way to the diamond and gold fields of the interior. In these conditions, the farmers had to be completely self-sufficient due to their distance from any towns or law officials.

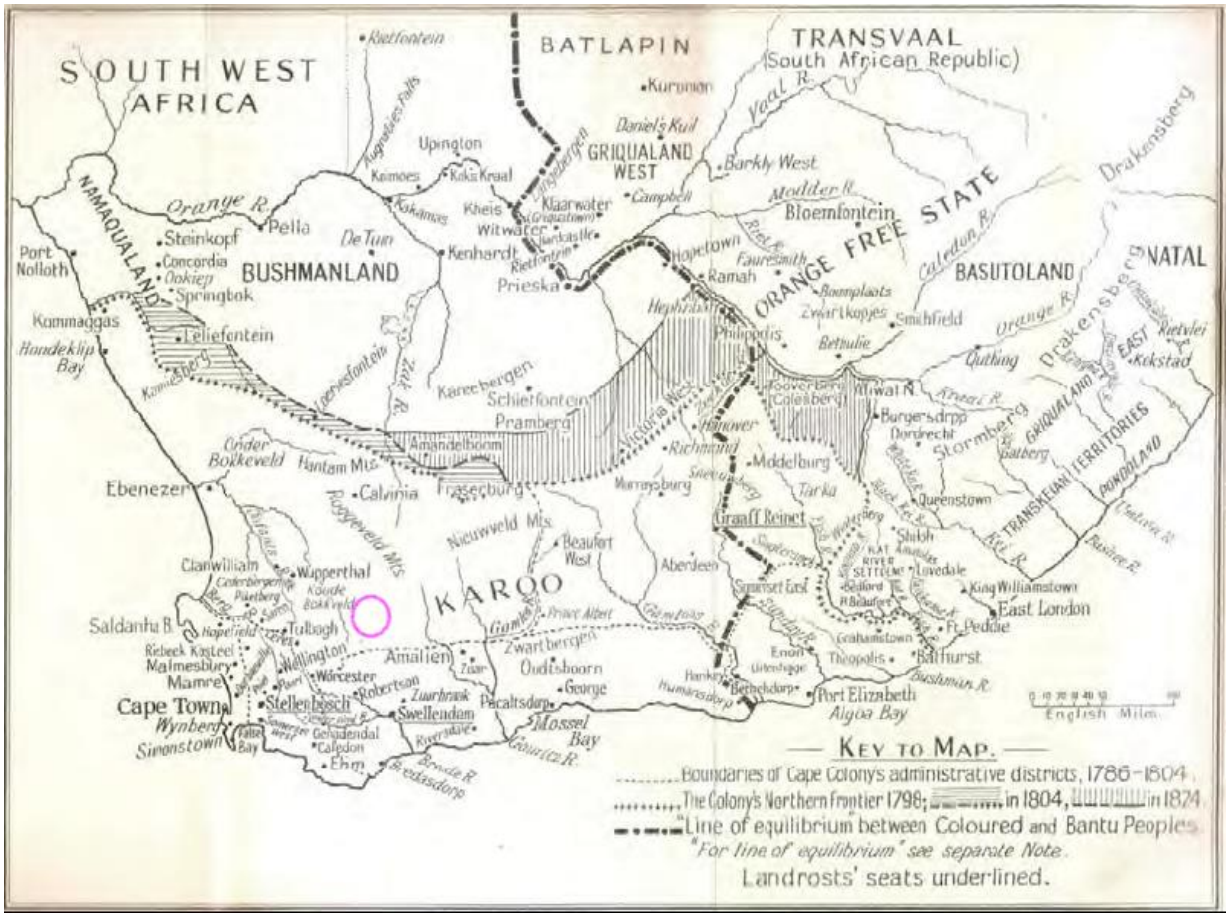


*Figure 8: C19th Cape Frontier map (Marais, 1935) showing approximate location of Patatskloof WEF (pink).*

The historic R356 which runs from Karoopoort through the Komsberg on towards Sutherland is evident in most historic maps and the subject of a well-known non-fiction book, *The Forgotten Highway to the North* (Mossop, 1927) which draws on travellers accounts from the C18th and C19th centuries:

> *"Between Karoo Poort beyond Ceres and Verlaten Kloof – that 'Pass to the Roggeveld" of the early travellers which now conducts us to Sutherland – there is a long-forgotten highway which was once part of the great road to the north-east. It began as the route across the Bokkeveld Karoo used by farmers from the Warm Bokkeveld (Ceres Basin), who, between 1750 and 1800, were establishing "legplaatse" and even permanent farms over the Koedoesberg along the foot of the Roggeveld Range… It was the forerunner of the modern high road (N1) which accompanies the rail across the Great Karoo to Kimberley… Some fifty miles of lonely veld separates Karoo Poort from Verlaten Kloof, but many miles of the forgotten highway are used by day to day farmers passing from farm to farm and by the trek boer."*

Karoopoort formed part of a system of outspans that functioned as an area of rest in the journey towards

the interior, with outspans at Platfontein and Bruwelsfontein on the historic southern road that passes the Tooverberg en route to Matjiesfontein. These roads were the main thoroughfares to the interior of southern Africa prior to the railway that was built to facilitate the more efficient transport of gold and diamonds to the Cape.

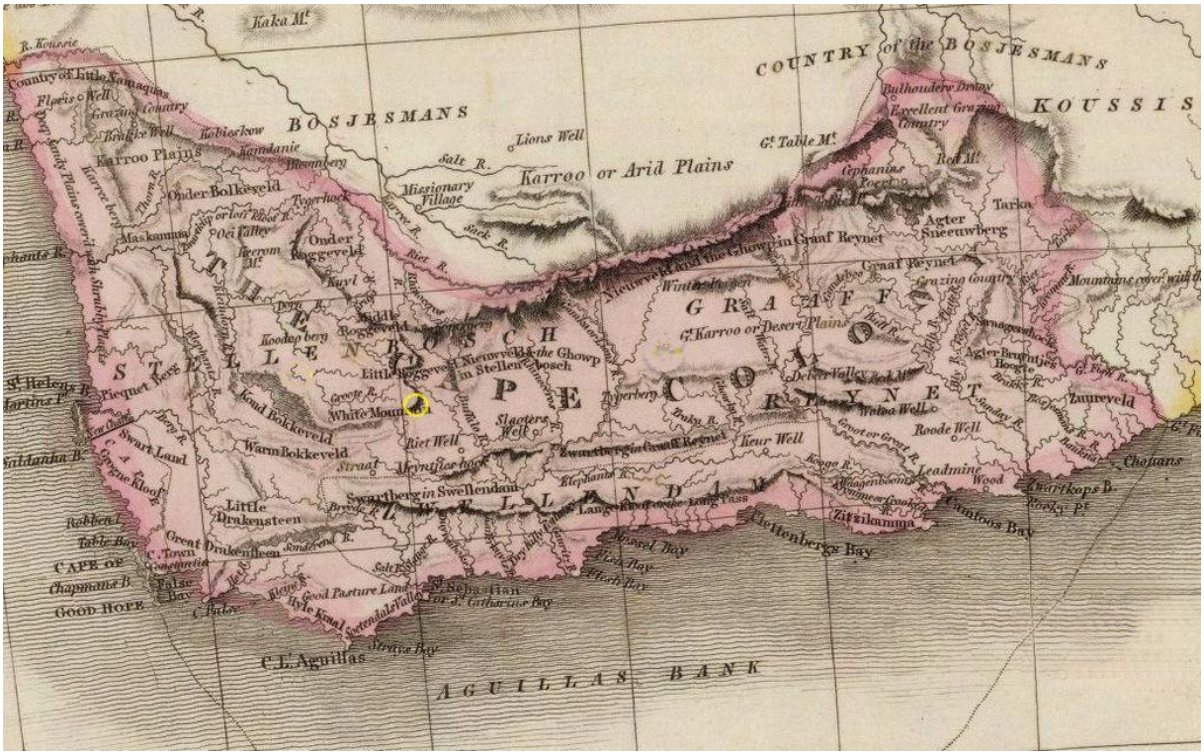


*Figure 9: Excerpt of 1809 Cape Colony map showing approximate location of proposed Patatskloof WEF (yellow).*

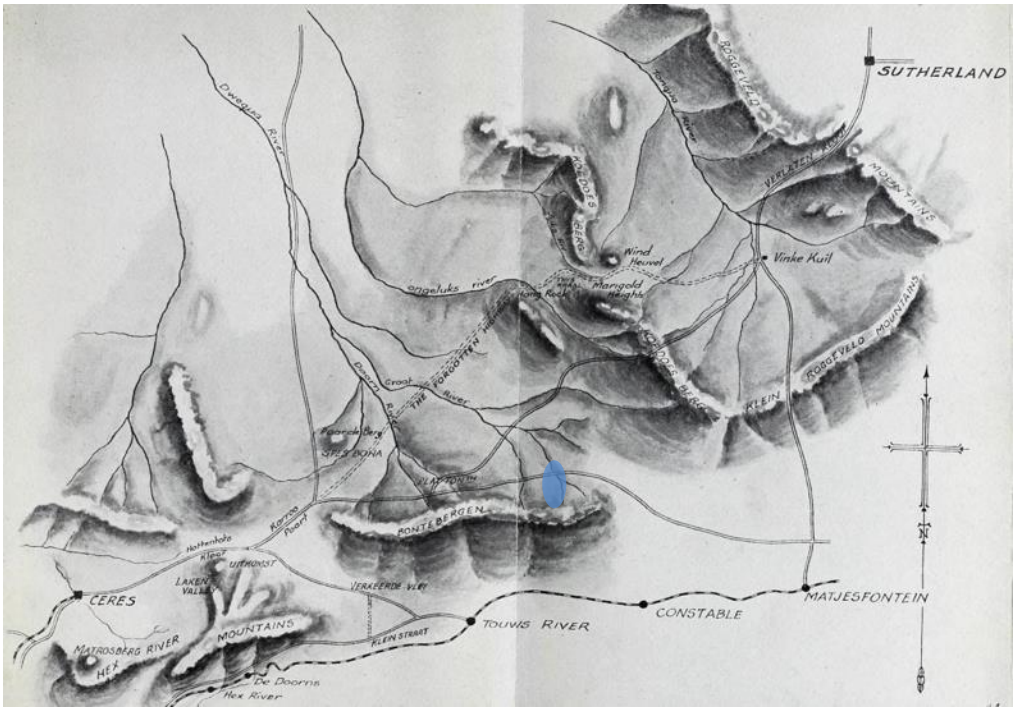


*Figure 10: Map of the historic 'Cape Highways' in* The Forgotten Highway to the North *(Mossop, 1927) showing approximate location of Patatskloof WEF (blue) and the Platfontein Outspan to the west.*

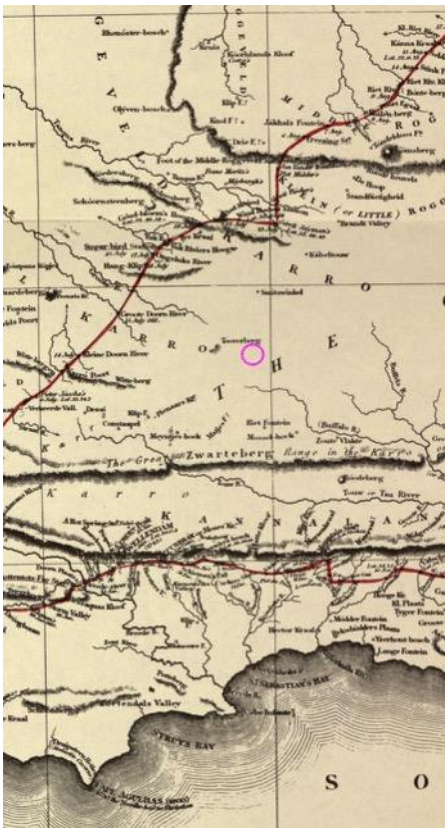


*Figure 11: Excerpt of the Burchell's 1822 map of Southern Africa showing approximate location of proposed Patatskloof WEF (pink). The Tooverberg is noted to the west of the site.*

With such an homogenous and flat landscape to traverse, distinct topographic features played a historically significant role in the navigation of these places. Koppies, such as Tooverberg, Pramberg and Hangklip (so named for the features they portray over long distances as travellers would view them from afar), *drifts* through rivers and *poorts* through mountain ranges were critical to the survival and success of the people who inhabited and crossed these arid plains.

This has remained an area of stock farming (mainly sheep, best suited to this environment and the farm sizes) and, more recently, game. Tourism is a main draw card for the region, being recognised and appreciated as a place of natural arid beauty and dramatic landscape. Most recently the main new development in the region is related to national electric grid connections and associated renewable energy developments, for which there are a multitude of proposed projects currently in process

## 9. REGIONAL CULTURAL LANDSCAPE ELEMENTS

1. This part of the Karoo is prized for its wide open spaces and expansive vistas. It is precisely the lack of development that gives this landscape its significance; a landscape which has supported continued patterns of use for millennia.

2. The distinct remoteness of the semi-arid Karoo provided a refuge for the displaced San and later the Khoekhoen. This remote desert wilderness is an essential element to the Karoo cultural landscape's sense of place.

3. Low shrubby vegetation dominates the landscape allowing for distant views of mountain ranges, with taller clusters of trees marking historic points such as cemeteries or farmsteads. Many of the endemic species hold medicinal value for local communities, making these signficant as cultural resources.

4. Although not immediately apparent on travelling through the landscape, significant stone age archaeology is common in the area; material cultural remnants of the prehistoric inhabitants of the landscape who lived in intimate dependence on and knowledge of the natural environment, shaping it and being shaped by it over time. This relatively undisturbed area is rich in archaeology, due to the presence of non-perennial water and includes stone tool scatters, rock paintings and herder kraals.

5. *Poorts* and *drifts* which navigate the topography of ridges and riverine corridors. These natural crossing points, gaps between the mountain ranges, ridges and undulating hills, and shallower sections of river, have been used by animals and people as the places to traverse the landscape to water, forage, safety or settlements for centuries. These places, acting as funnels of movements across the landscape, therefore, may hold the material scatter of those who passed over them and, where

identified historic tracks are still used, these are heritage elements of land use and one of the ways in which the landscape would have determined the movement and, therefore, settlement and interaction of people on the landscape.

6. Distinct topographic features which can be seen from a distance over the vast plains between the mountain ranges have been used for millennia for navigation over the homogenous and flat terrain. These koppies have been critical in the survival and success of inhabitants and travellers over time, giving sense of place and orientation, most likely taking on spiritual significance for some groups. The shade and potential water source that they offer would have further raised the reliance on these features by inhabitants of the landscape.

7. Scenic historic movement routes, tarred and gravel, connect the regional towns over the Komsberg Karoo landscape with distant dramatic viewscapes of mountain ranges. These movement routes and patterns to access have informed the settlement patterns of the region. Many of the roads and farm tracks in the study site as well as surrounding area are visible on maps dating back to the 18$^{th}$ and 19$^{th}$ centuries. As a landscape that maintains a dominant characteristic of survival, conflict and change, the roads and paths that cross this landscape are an essential element, connecting the significant points, places of refuge and conflict, trade and subsistence, to each other in a challenging space over time.

8. A system of historic outspans that functioned as areas of rest for man and beast on the long and arduous journeys to the interior can be found in the area. The most notable being the one associated to Karoopoort. Two others are found at Platfontein and Brewelsfontein on the southern gravel route runnning parallel with the Bonteberg between Karoopoort and Matjiesfontein.

9. A combination of the *poort* and scenic historic route elements, the historic Karoopoort, is an identified historic scenic route and declared Provincial Heritage Site. Historic mountain passes provided access between coastal plains and the remote interior, and their gateway conditions are typically associated with historical patterns of settlement (Winter and Oberholzer, 2014).

10. The historic farms boundaries of the area date back to the late 19$^{th}$ century. As elements of historic land management, which would have considered access to water sources and grazing, these boundaries are part of the cultural landscape and the fencing and stone markers that mark these boundaries are considered of IIIC heritage significance.

11. Historic farmsteads with their associated agricultural structures and linking farm roads. Many of the farm werfs include historic structures, built in the regional architecture of packed local stone, now converted into dwellings or sheds. These farmsteads are mostly situated at points of lower elevation,

nestled against the hills and ridges where the soils are more suitable for agriculture, and where nearby springs or other water sources supply water for livestock and limited cultivation of crops.

12. Stone walls and kraals dot the landscape as remnants of stock keeping, road building and fortifications in the area.

13. Agricultural landscape with livestock, mostly sheep and cattle; fencing and associated structures line and dot the landscape. These are evidence of the human landscape modifications and patterns of land use over millennia, including seasonal grazing and pastoral uses.

14. The names of places and farms are testament to the relationship between man and nature, with illustrative Khoi, San, Afrikaans and Dutch names describing the interpretation and representation of the area.

15. Game and nature reserves with live game and associated high fencing, drawing tourists to the region for game viewing and hunting. Game hunting has been continuous on this landscape for millenia since pre-historic inhabitants to the most recent tourist hunters, and attests to the ongoing relationship between humans and the environment in this region. Sadawa Private Game Reserve, Fair Game Farm, Sand River Conservancy, Vaalkloof Private Nature Reserve, Shamballa Sanctuary, Inverdoorn Game Reserve, Kareekloof Conservancy & Guest Farm all offer ecotourism opportunities with accommodation. Sothemba Lodge Guest Farm, Ibhadi Game Lodge, Snyderskloof, Keurkloof Cottage, Miskloof Farm Getaway, Blue Berry Hill Guest Farm offer accommodation and landscape-oriented experiences.

16. Historic town settlements and landscapes, such as Ceres, Matjiesfontein, Touwsrivier and Laingsburg, associated to significant events in South Africa's history of survival, conflict and nation-building, including many provincial heritage sites which mark people and places of value to our national estate.

17. Industrial elements of transmission lines, wind turbines and associated infrastucture are evident in the landscape and are fast altering the sense of place in the area.

## 10. THE PATATSKLOOF CULTURAL LANDSCAPE

### 10.1 Landscape Elements

The cultural landscape is a composition of a series of natural layers that have both informed and been formed by the patterns of human use and habitation on that place over time. The nature and shape of the landscape has informed the way in which it has been used, in turn ascribing cultural values to the these

place-specific features. Through unpacking the layers, landscape character units can be identified which need to be carefully considered in proposed alterations to the landscape.

### *10.1.1 Geology and soils*

The geology of the area dictates the soil structure, which in relation to climate will determine the capacity for the land to be used by humans for agriculture. Geology will also determine what raw materials are available for use in building structures or other land management practices.

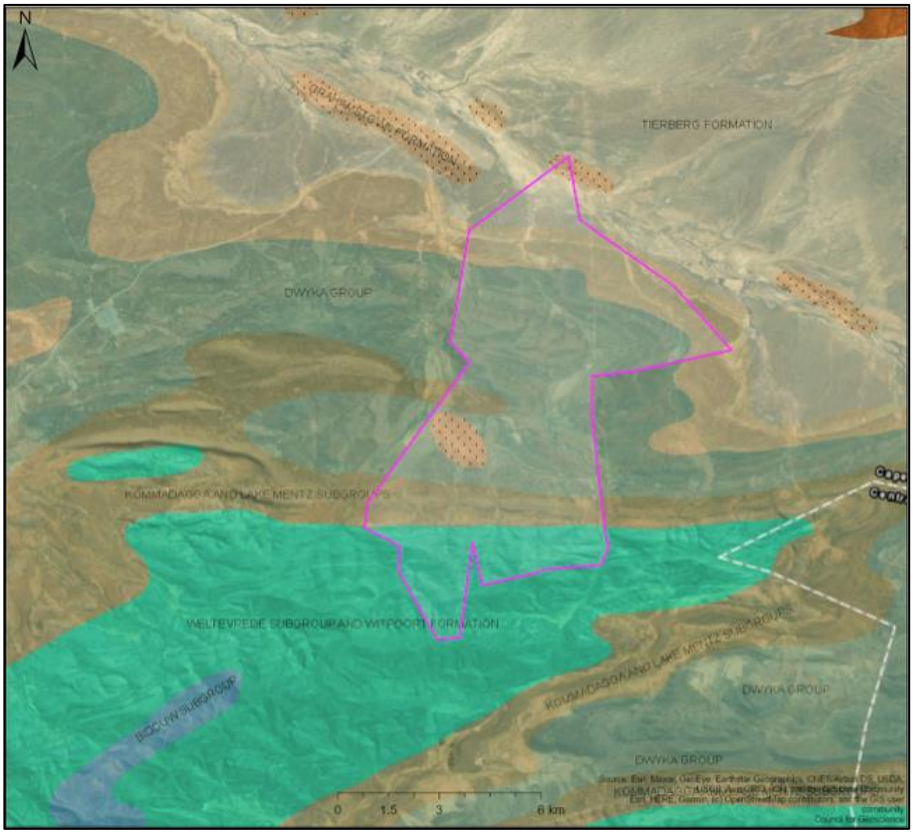


*Figure 12: Geological map of the area showing proposed Patatskloof WEF (Cape Farm Mapper, February 2022)*

*Figure 13: Examples of local stone being used in human activity of the Patatskloof landscape - fence posts (left) and stone structure (right)*

*Figure 14: Stone fence posts running along a farm road on the Patatskloof site looking west towards Tooverberg.*

According to Cape Farm Mapper (accessed 28 June 2021) the lower elevations of the project site are classed as Glenrosa and/ or Mispah form soils with lime generally present in the entire landscape and with moderate soil erodibility for most and high erodibility along the northern boundary. The land type is Fc121 over the majority of the site with Ib393 present on the southern rocky areas with miscellaneous soils and Fc56 in the north. These land types are considered to be of "low to moderate agricultural potential".

The land capability of the Pataskloof project site is considered very low to low for the majority of the site with very limited portions of moderate to moderate – high capability in the low lying riverine corridors (Figure 15). Stock and game farming are thus well suited to the larger area, with the use of the land for sensitive conservation and eco-tourism facilities sustainable and economically viable.

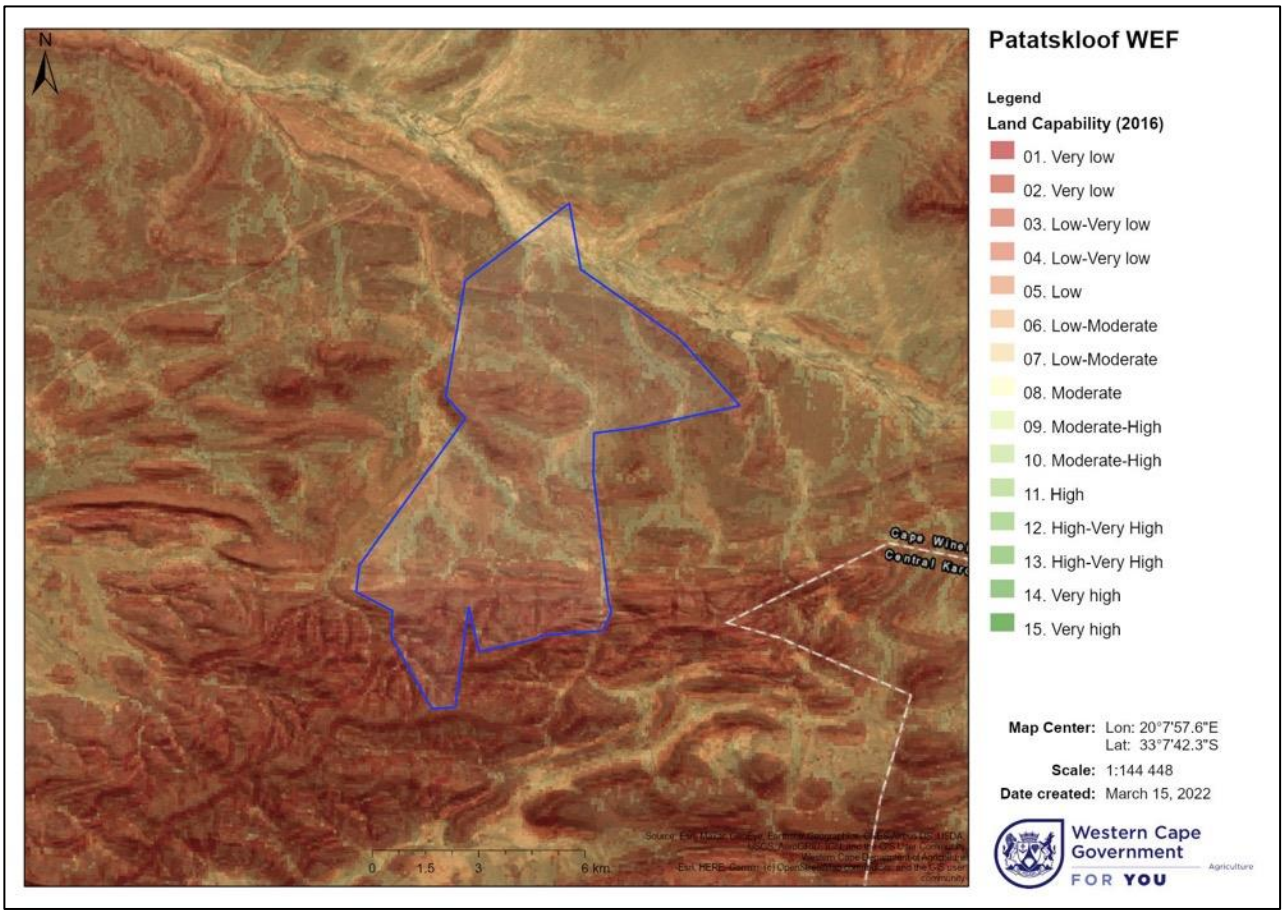


*Figure 15: Land capability map for Patatskloof site (Cape Farm Mapper, Jan 2022)*

### *10.1.2 Landform*

Landform describes the topography of the area. The contours of the study area can be interpreted to identify slope gradient, with anything steeper than 25% slope being the steepest (like mountain slopes) and anything less than 10% slope representing a flatter area (like alluvial plains). Steep gradients and higher relative elevations increase the potential visual impact of a WEF development on the surrounding landscape.

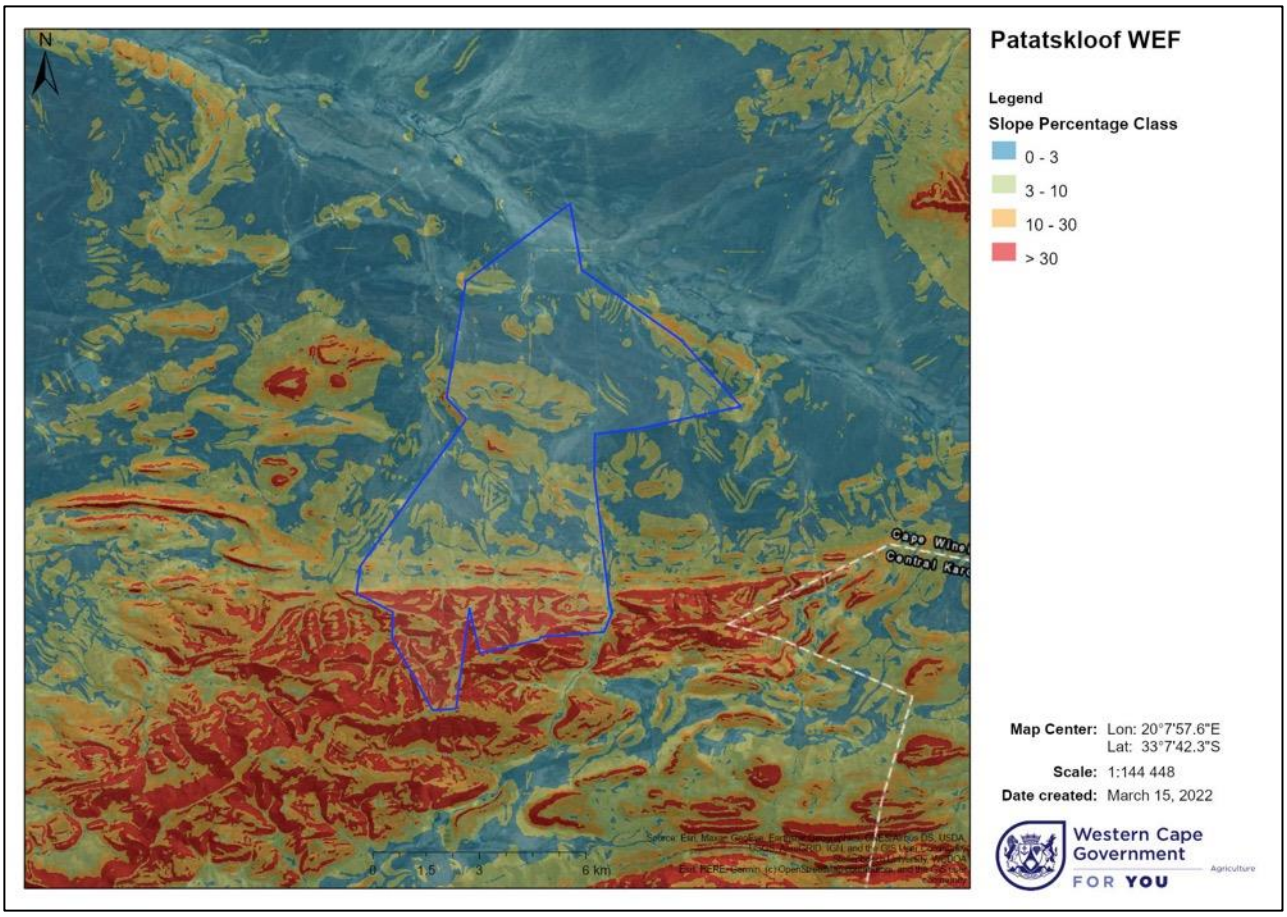


*Figure 16: Slope classification (%) for the Patatskloof project site and surrounds (Cape Farm Mapper, Feb 2022)*

The area is characterised by varied relief, with flat undulating terrain to the north of the site rising to steep mountainous slopes on the southern Bontebergen ridge. The majority of the project site consists of relatively flat terrain with a slope gradient of less than 3%. A low koppie of 3->30% slope gradient dominates the central portion of the site, with a ridge of mid elevation, 3->30% rising up the Bontebergen in the south. The low koppie and southern ridge create defining topography on the landscape and influence the sense of place as one travels through it. This koppie is of relatively low elevation on the landscape and is only experienced at a local scale; from a distance these undulations largely disappear into the expansive flat plains of the Ceres Karoo. The addition of wind turbines or electrical grid infrastructure to these relatively higher elevations will emphasise the change in topography. However subtle these changes in elevation are, in this flat vast landscape, the slightest elevation becomes a point of reference.

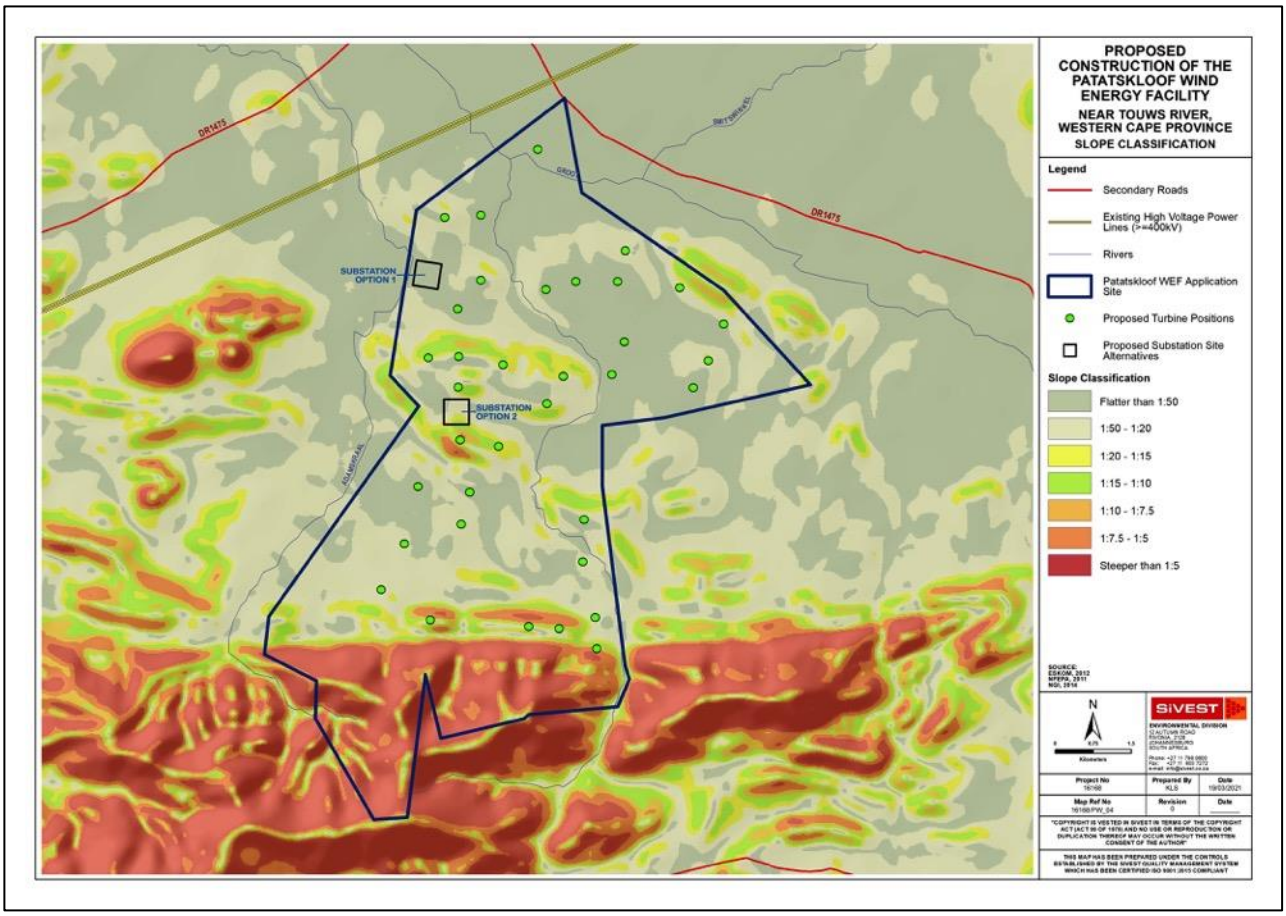


*Figure 17: Patatskloof slope classification (%) showing proposed wind turbine layout (SiVest, Sep 2021)*

*Figure 18: Looking south over Patatskloof WEF landscape towards Bontebergen*

The Visual Impact Assessment for Patatskloof (Schwartz, 2021) concluded with the following on the impact of the WEF turbine development on the study site:

"Overall, sparse human habitation and the predominance of natural vegetation cover across much of the study area would give the viewer the general impression of a largely natural setting with some pastoral elements. As such, a WEF development with associated grid connection infrastructure would alter the visual character and contrast significantly with the typical land use and/or pattern and form of human elements present across the broader study area. The level of contrast will however be significantly reduced by the presence of the Kappa Substation, high voltage power lines and Perdekraal East WEF within the study area."

In response to these findings, the VIA recommended the following mitigation:

"Using GIS-based visibility analysis, it was possible to determine that the tip of at least one turbine blade (ie at a maximum height of 300m) would be visible from most identified potentially sensitive receptors in the study area and as such, no areas on the site are *significantly* more visible than the remainder of the site. It should be noted however that the visual prominence of a very tall structure such as a wind turbine would be exacerbated if located on a ridge top or a relatively high lying plateau. As such, it is recommended that wind turbines should preferably not be located on the highest ridges within the WEF development area. While these ridges could be seen as areas of potentially high visual sensitivity, the study area as a whole is rated as having a moderate visual sensitivity (*due to limited receptors*), and as such, the sensitivity rating would be reduced to "Medium-High".

From a visual perspective, another concern is the direct visual impact of the turbines on any farmsteads or receptors located on the application site. Accordingly, a 1km visual sensitivity zone has been delineated around the existing residences on the application site and also around the two receptors located within 1km of the site boundary. This 1km buffer is in accordance with the flicker-sensitive buffers applied in the DFFE Screening Tool. In addition, it is recommended that the following visual sensitivity zones are applied to main roads on or near the application site:

- District Road DR1475: 500m

The preclusion of turbine development from these zones would reduce the direct impact of the turbines on the occupants of the farmsteads and on passing motorists, especially those impacts related to shadow flicker."

The DFFE Screening Tool for Landscape Sensitivity shows the mountain ridge, as well as the central koppie and mid elevation ridge to have high landscape sensitivity for the proposed Patatskloof WEF site (Figure 19) and should, thus, be excluded from the WEF development area.

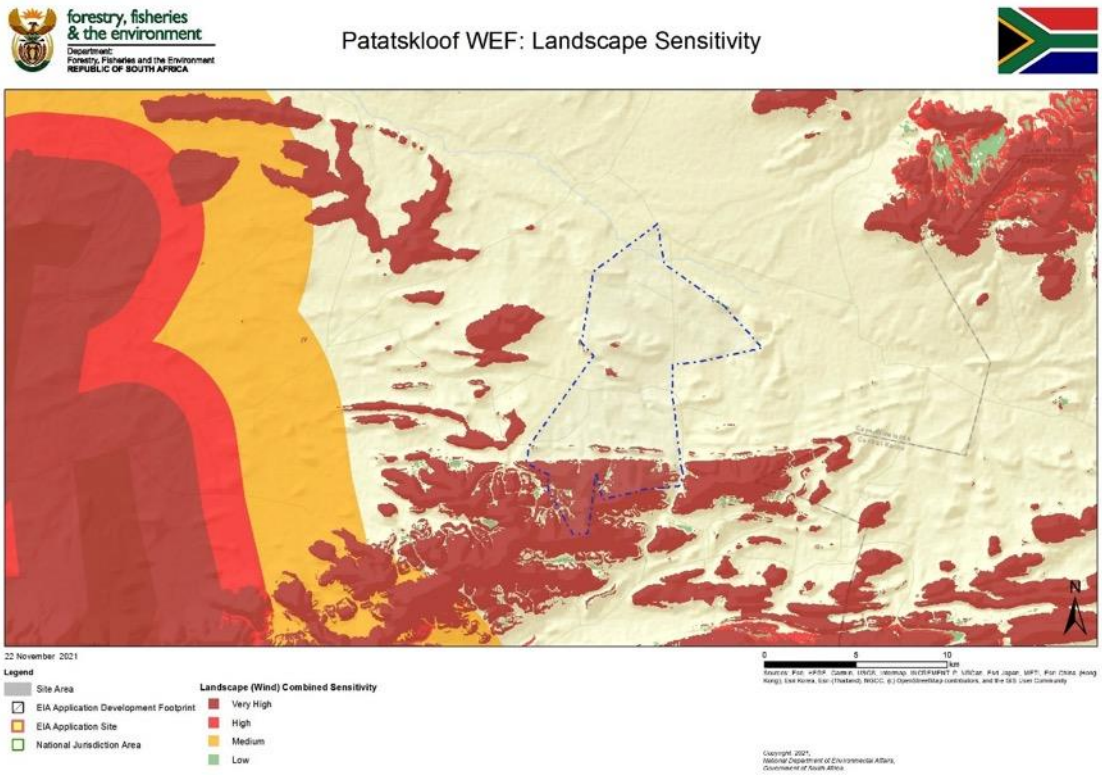


*Figure 19: DFFE Landscape Sensitivity for Patatskloof WEF site (Nov 2021)*

### *10.1.3 Hydrology*

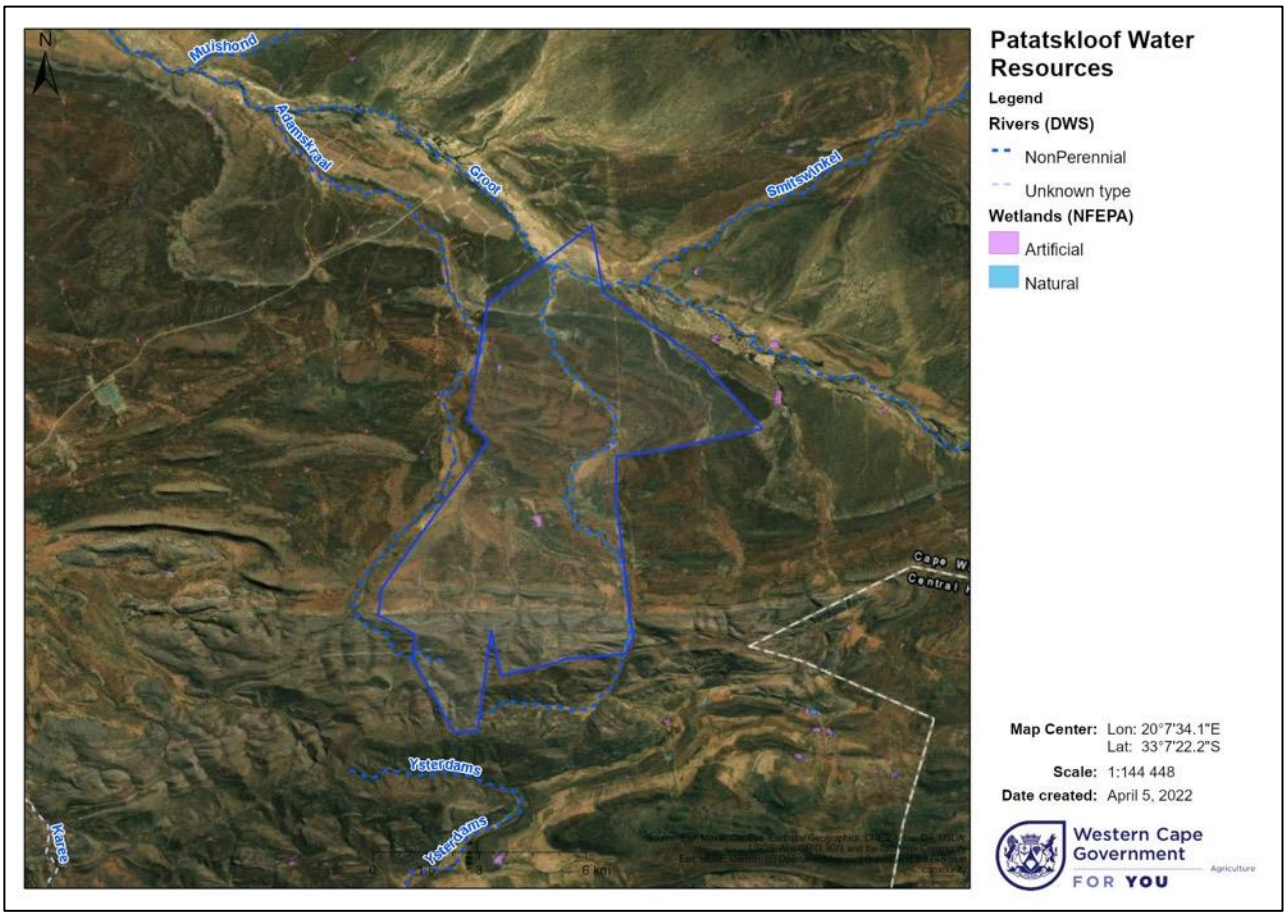


*Figure 20: Cape Farm Mapper (2021) map of non-perennial rivers (blue) and wetlands (pink) for Patatskloof landscape.*

The hydrology of the Pataskloof landscape is comprised of non-perennial rivers that reflect the local place names, indicating a close relationship between inhabitants on the landscape and these rivers as well as the significant dependence on these resources. These aquatic environments are also the focus of the Critical Biodiversity Areas and Ecological Support Areas for the area.

Wetlands and rivers are hydrological features sensitive to development and integral to the landscape character of the study area. In order to retain the landscape character of the area, cognisance must be taken of the contribution of rivers and wetlands in a water-stressed area to the evolution of the landscape character of the area. Two main river drainage lines, Adamskraal and Grootrivier tributary, running off the Bonteberge mountains in the south to the Grootrivier major drainage line to the north of the site, inform the Patatskloof landscape. The study area features a number of constructed dams related to these non-

perennial rivers, which can be considered a feature in the landscape. The landform has been historically altered to maximise the water potential of the area and the dams therefore form part of the Cultural Landscape.

*Figure 21: Wetland feature in centre of Patatskloof site with manmade dam in the background showing water management strategies in this water-restricted environment*

### *10.1.4 Vegetation*

The study area is situated within the succulent Karoo, and forms an integral part of the unique landscape character that is classified as a least threatened ecosystem. Most of the study area has been used for agriculture, drawing on the potential of the natural vegetation to support livestock (mostly sheep), and therefore has a largely untouched character. Note that large pockets of critical biodiversity areas (CBA), and ecological support areas (ESA) usually run along the drainage and water accumulation lines. The lines of the river as well as the subtle rocky outlines support different vegetation, and typically taller plant species.

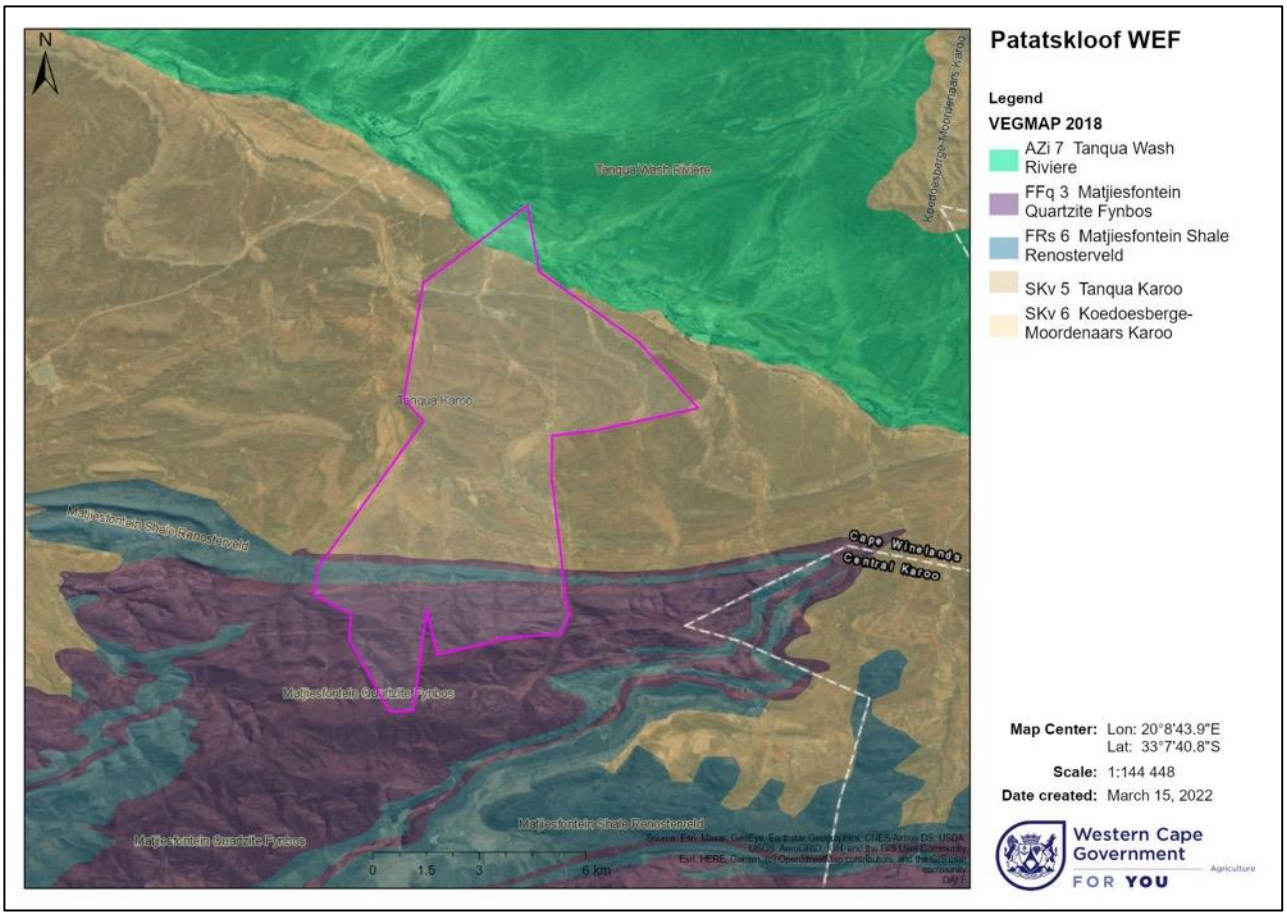


*Figure 22: 2018 VegMap showing vegetation types for Patatskloof site (Cape Farm Mapper)*

*Figure 23: Typical karroid vegetation of Patatskloof WEF site, which has historically been used for stock farming.*

*Figure 24: River drainage line in Patatskloof site showing taller riverine vegetation*

*Figure 25: Vegetation on elevated slopes on Patatskloof site showing increased variation in type.*

*Figure 26: Onder Drinkwaterskloof homestead showing taller vegetation plantings around inhabited site.*

As per the recently conducted Ecological Assessment for directly adjacent proposed Pienaarspoort WEFs 1 and 2 by 3Foxes Biodiversity Solutions (Simon Todd, January 2021) field analysis has refined and provided

more detail regarding the nature of the vegetation found in the development area:

"The Pienaarspoort WEF 1 site falls largely within the Tanqua Karoo vegetation type, with some Matjiesfontein Quartzite Fynbos and a small extent of Matjiesfontein Shale Renosterveld present in the south of the site. The major drainage line that traverses the site, the Grootrivier, is classified as Tankwa Wash Riviere. The extent of Tanqua Wash Riviere at the site has been over-mapped (i.e. the mapping provided does not match the extent of the features observed on site and therefore the mapping shows larger areas of Tanqua Wash Riviere present which is not an accurate on-ground reflection) under the Vegmap (which is undertaken at a desktop level) and this resulted in the identification of inaccurate CBAs in the area in the 2017 Western Cape Biodiversity Spatial Plan (BSP). The field assessment indicates that the northern extent of the site outside of the Grootrivier floodplain represents typical Tankwa Karoo vegetation and is not riparian vegetation as currently mapped in the Vegmap."

The field assessment also revealed that there are numerous plant communities associated with different habitats and substrates at the site including the rocky hills, drainage lines, gravel patches and open plains. While the open plains are considered to be low sensitivity, the other habitats are variously sensitive from medium sensitivity for the typical low rocky hills to very high sensitivity for the quartz patches, certain drainage lines and some south-facing slopes of the site.

#### *10.1.5 Conservation: Biodiversity*

The Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA) are essentially a combination of the following layers and their biodiversity significance:

- Ecosystems
- Vegetation Types
- Wetland Types
- River Types
- Estuaries
- Indigenous Forest
- Threatened Species

The CBA and ESA areas for the Patatskloof project site are largely riverine related with the aquatic environments of the main drainage lines running off the Bonteberg mountains in the south to the Grootrivier

major drainage line to the north of the site. All the non-perennial river corridors are identified as ESAs for the project site (Figure 27).

The rationale of this study is that the CBA and ESA layers embody those natural hydrological, vegetation and ecological variables that are integral to maintaining the landscape character in some areas of the study area. The CBA's constitute highly significant areas and the ESA's include areas of medium significance, even from a heritage perspective (Jansen and Franklin, 2020). This is because agricultural and heritage values overlap in these considerations. The significance of the site, in the way that it was farmed to maintain the integrity of the natural vegetation, signifies a unique relationship between man, and nature where it reflects an entangled dimension, and representative of a cultural landscape.

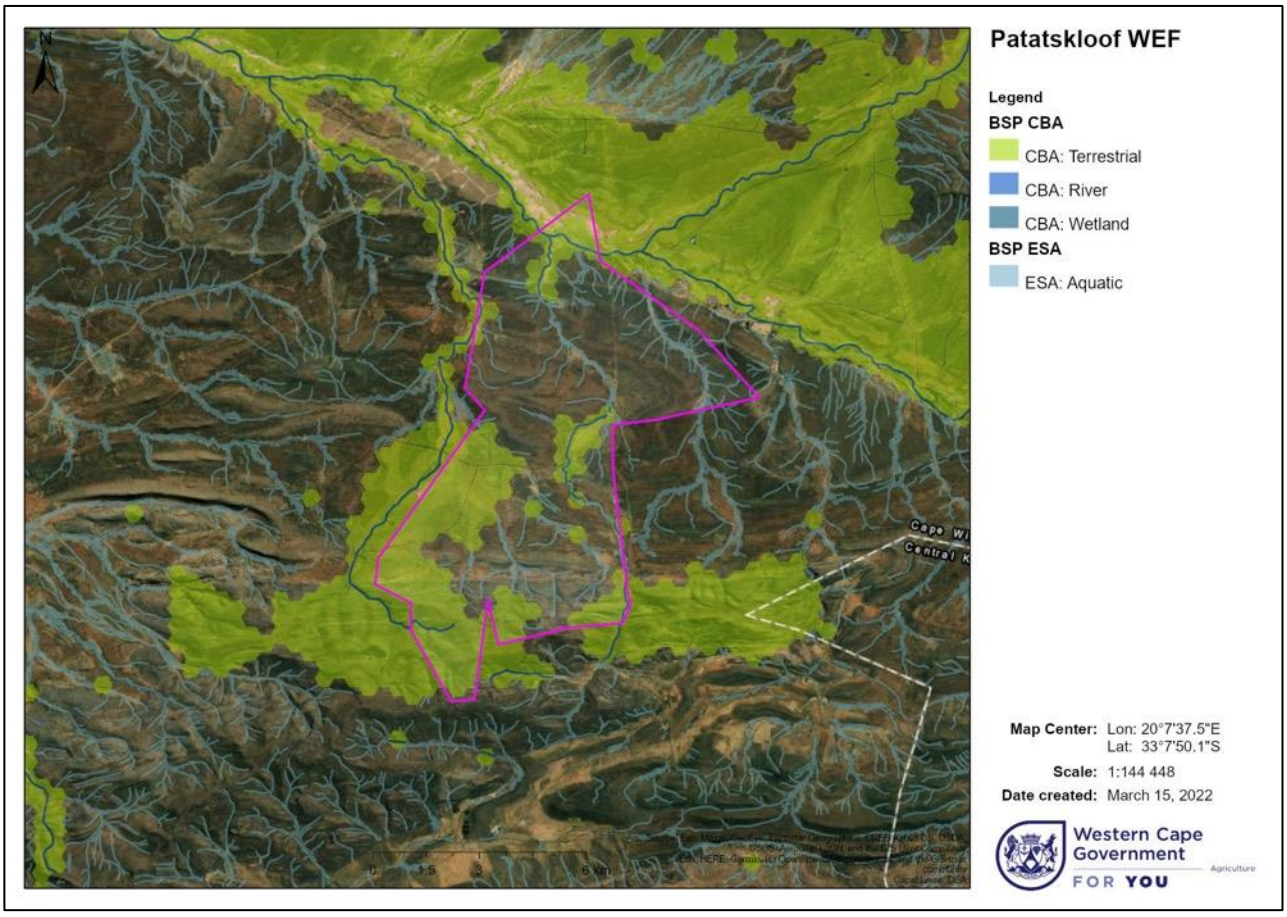


*Figure 29: Critical Biodiversity Areas and Ecological Support Areas map for Patatskloof landscape*

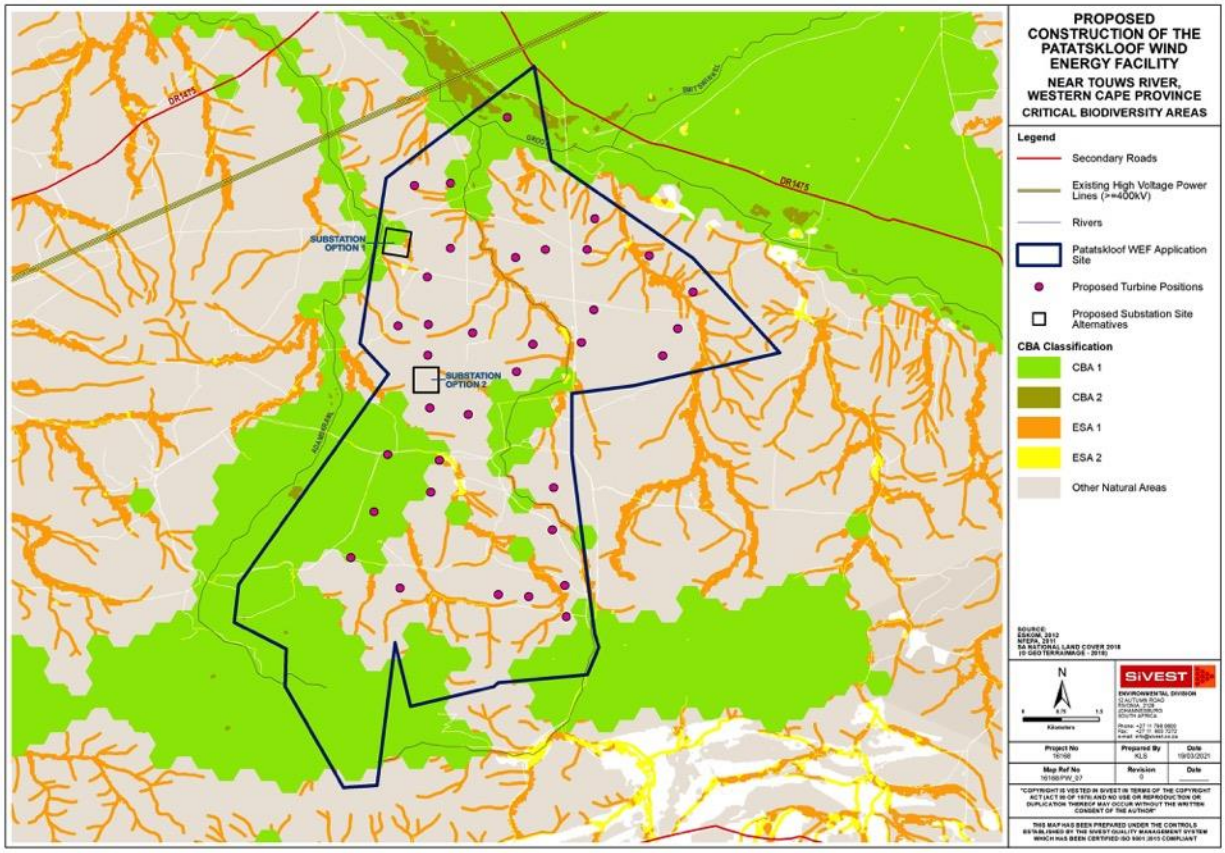


*Figure 27: CBA and ESA map for Patatskloof WEF site including proposed turbine layout (SiVest 2021)*

## 10.2 Cultural Elements

### *10.2.1 Archaeological material*

Various archaeological impact assessments have been completed for the surrounding landscape, with the following findings summarized in the AIA for adjacent Pienaarspoort 1 WEF site (CTS, Feb 2021):

"Heritage Impact Assessments have been completed within 20km of the area proposed for development and are recorded on SAHRIS, the South African Heritage Resources Information System. It is noted that wherever an assessment has been completed, heritage resources of significance have been identified. According to Deacon (2008, SAHRIS ID 4843), this area "is well known for its rock art. However this is restricted to the kloofs and higher lying areas. There is the possibility that stone artefacts of different ages may occur in well-watered lowlands and valley margins." In addition, according to Pinto and Smuts (2011, SAHRIS ID 375379), "Agriculture since colonial times has been, to a large extent, marginal and has had a low impact on the archaeological evidence for these early communities. Prehistoric sites in the area,

consisting predominantly of surface and sub-surface stone artefact scatters in the open landscape together with overhangs and recesses in the sandstone hills used as shelters, are likely to be well preserved with little disturbance from later historic periods." According to Smuts et al. (2018, SAHRIS NID 514990), studies completed in the broader area identified surprisingly little pre-colonial or Stone Age archaeology, and distinct spatial patterning to the little that was found. Almost all archaeological material, predominantly in the form of scatters, has been identified on the flat floodplains up to the foothills of the mountains, and within river valleys along watercourses… The area is known to have been inhabited since the Early Stone Age (ESA) and throughout the Middle Stone Age (MSA). Later Stone Age (LSA) scatters have also been documented throughout the region, although at remarkably low density, although excavations at cave sites near Sutherland yielded significant LSA cultural material". Furthermore, Smuts et al (2018) notes that rock art and archaeological resources associated with the trek boers and historical occupation of the area are known from the region.

In 2016 a Draft HIA (Hart et al.) for the proposed Kolkies and Karee WEFs on neighbouring properties was not completed as the project was cancelled. Hart et al. (2016) note that in terms of impacts to archaeology, sites tend to be found on the banks of river beds. Discrete scatters of Middle Stone Age artefacts are often identified in sheet washed locations at several farms in the area but they are not considered to be of high significance. In general, Hart et al. (2016) found that Late and Early Stone Age Archaeology is sparse. Hart et al. (2016) also found that the built environment is sparse. Hart et al. (2016) note that previous heritage work has shown there are numerous stone cairns along the dry river beds which may represent graves."

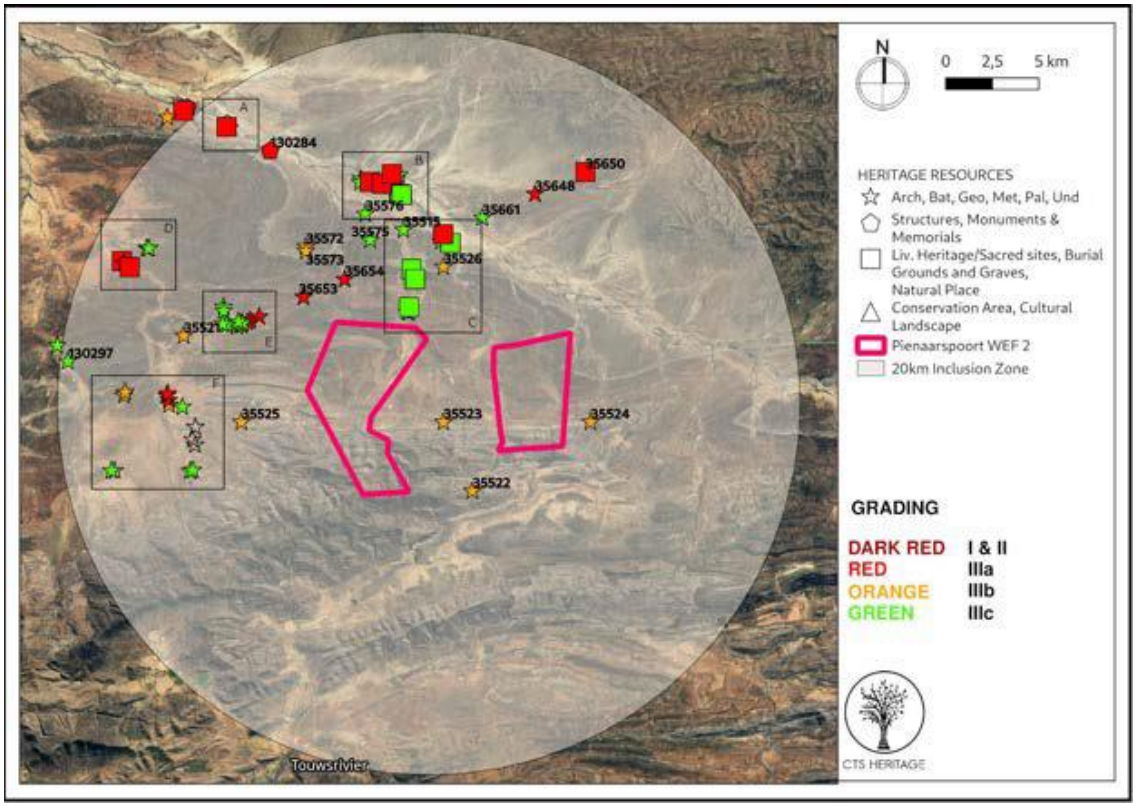


*Figure 28: Heritage resources map from SAHRIS - Patatskloof site is the piece of land between and above the Pienaarspoort land parcels shown in pink*

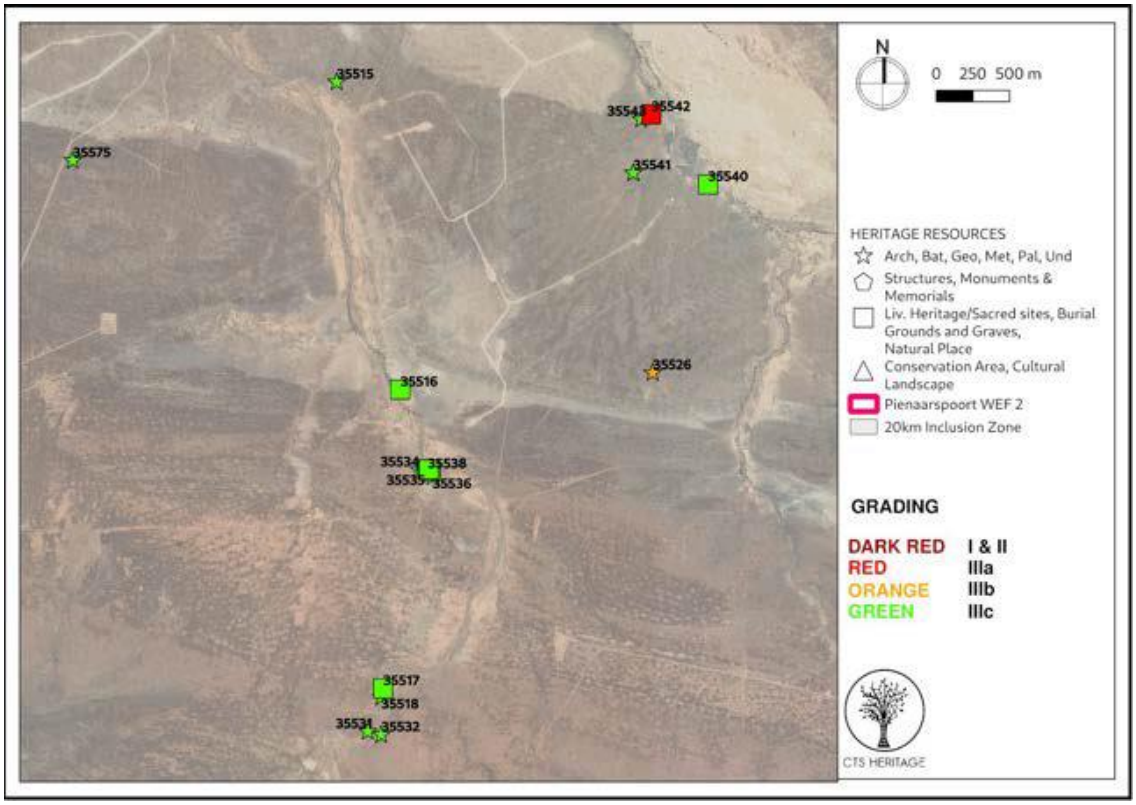


*Figure 29: Inset C from SAHRIS heritage resources map - sites 35526, 35516, 35534, 35535. 35536 and 35538 are on the Patatskloof WEF and Gridline sites.*

The Archaeological Impact Assessment for Patatskloof (PGS, January 2021) identified various elements of heritage significance including stone-age scatter sites, grave sites, rock art as well as historic farmsteads (Figure 32).

Of note are the ostrich eggshell (OES) beads (PK37) found at an LSA scatter near the Stinkfontein site on the Patatskloof project site. OES beads are not common finds in the area and could speak to an older occupation site near the Stinkfontein permanent spring and trade which may have occurred in this locale due to the water resource and the historic route. Associated with the Stinkfontein site are also graves (PK43), collapsed stone and mud brick structures (PK09) as well as a historic stone kraal (PK11). The layering of archaeological material indicate a site which has been associated with human activity for an extended amount of time. Although not present for interview on day of survey, there are currently signs of human habitation near the stone kraal, indicated by a caravan, a quadbike and other modern material objects.

The CL survey also found an unmarked grave near the Stinkfontein site, closely adjacent to the historic route.

*Figure 30: Unmarked grave near Stinkfontein spring*

*Figure 31: Fragments of OES and OES beads found near Stinkfontein permanent spring along a non-perennial river drainage line.*

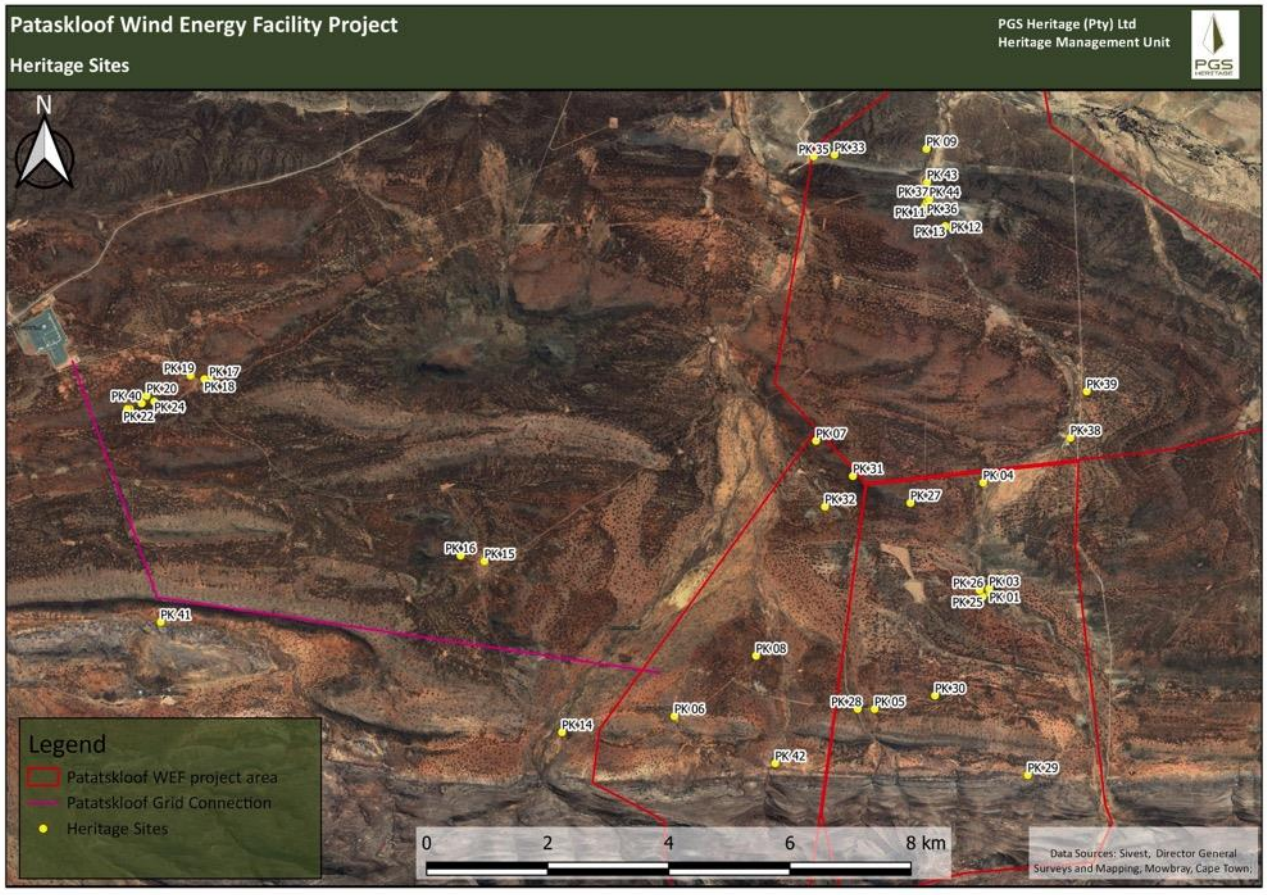


*Figure 32: Archaeological and historical resources identified by AIA (PGS, 2021) for Patatskloof site showing resources largely associated to river drainage lines.*

It is clear from the various archaeological assessments undertaken in the area and on the Patatskloof site, that the river drainage lines have been the focus of human activity since pre-colonial period until present. As such they form a significant element on the cultural landscape and should be considered IIIA heritage resources that warrant protection from development. A detailed survey must be conducted along proposed access roads or any other development in or near the river drainage lines to ensure no graves or other heritage resources are disturbed.

### *10.2.2 Historical farms and routes*

The history of the landscape is intimately associated to stock farming and waves of settlement throughout history. The stone-age and prehistoric archaeology attests to the inhabitants of the landscape before written history, with the first farmsteads and stone kraals and walls remnants of the first people to settle on the land more permanently rather than being transhumant. The place names of the farms and

landscape elements on historic maps give some context to the chronological evolution of settlement in the area. Many Afrikaans names are still prevalent with the terms *rivier*, *kraal, kop* and *poort*, commonly found in existing place names to describe the phenomenon being named. The use of influential landscape elements highlights the significance of these elements in the psyche of the historical inhabitants in this vast, seemingly barren, flat place. Names of individuals and descriptions of groups of people have also been used to name places and farms, which further attest to the historical cultural influences on the landscape.

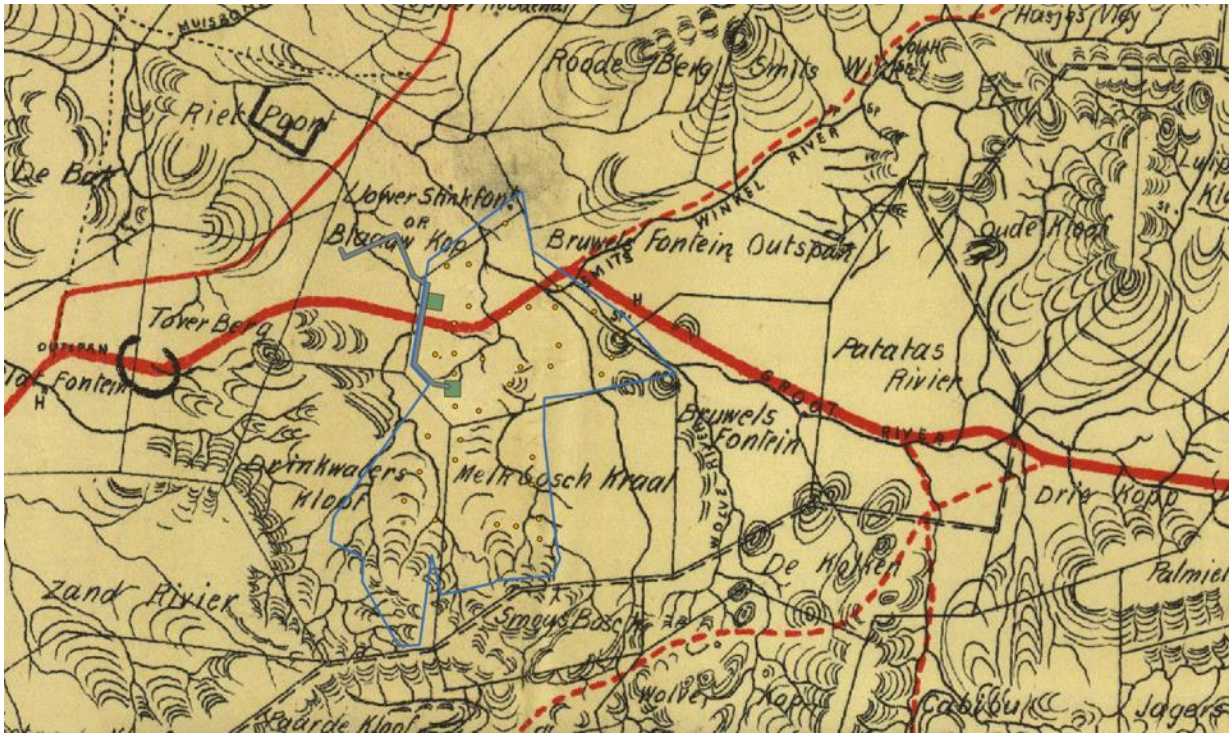


*Figure 33: Excerpt of the 1900-1919 Imperial map with proposed WEF boundary overlay.*

The historic farms boundaries in the proposed WEF site date back to the late 19th century. As elements of historic land management, which would have considered access to water sources and grazing, these boundaries are part of the cultural landscape and the fencing and stone markers that mark these boundaries are considered of IIIC heritage significance.

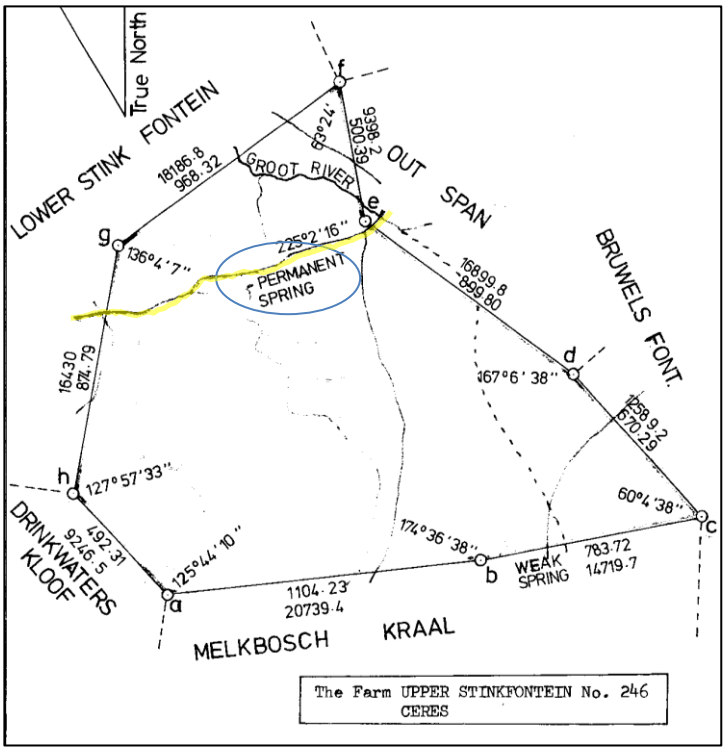


*Figure 34: 1870 Upper Stinkfontein SG Diagram showing permanent spring (blue circle) at Stinkfontein and historic track running east –west across the northern portion of the farm (yellow).*

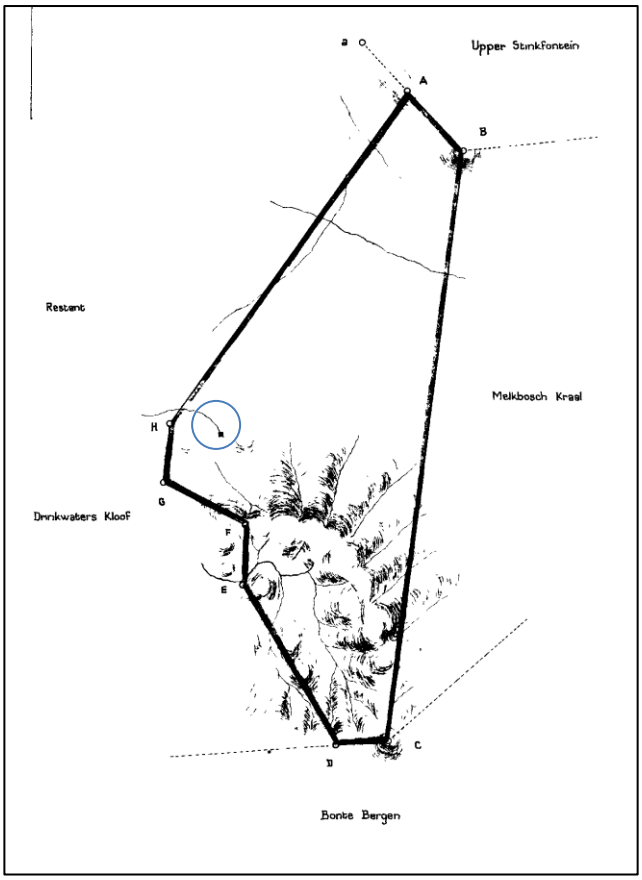


*Figure 35: 1950 Drinkwaterskloof SG Diagram showing Onder Drinkwaterskloof homestead (blue circle).*

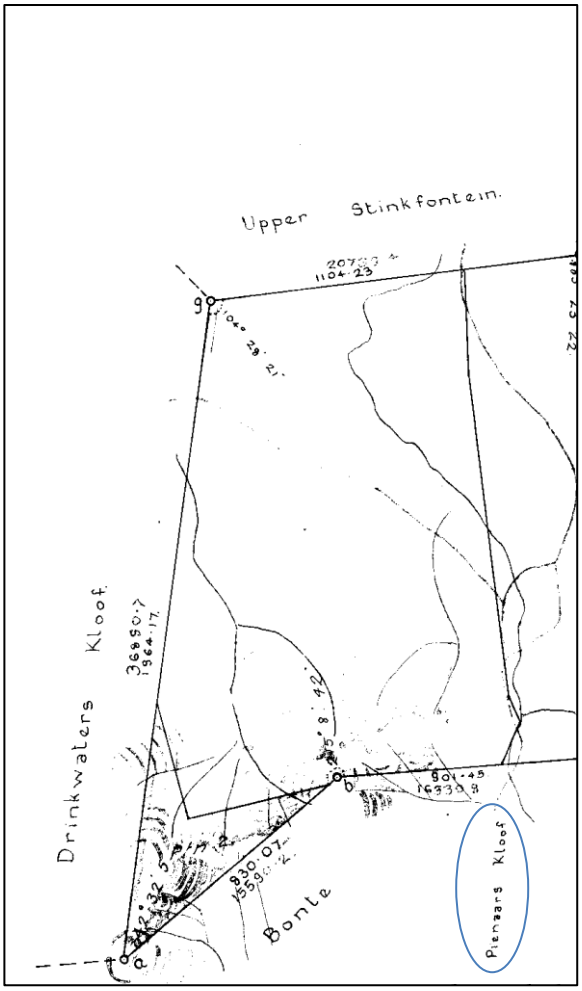


*Figure 36: 1870 Melboschkraal SG Diagram showing Pienaars Kloof (1969 Pienaarspoort)*

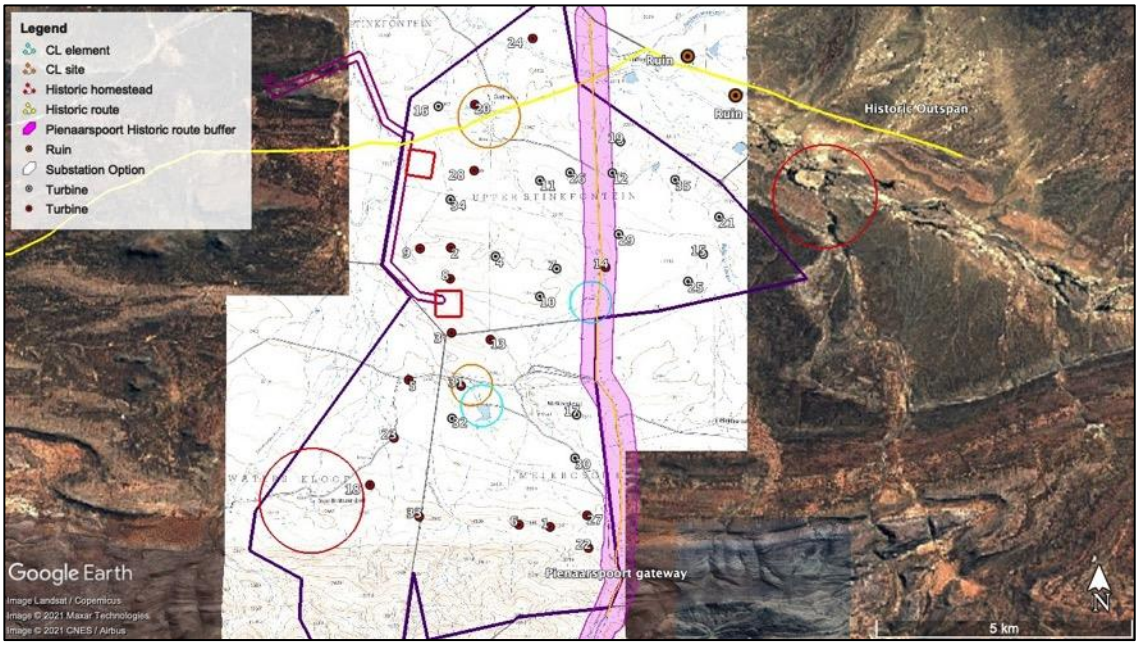


*Figure 37: 1969 1:50k topographic maps with proposed Patatskloof WEF development overlay showing historical heritage resources and cultural landscape elements.*

The farms *Drinkwaterskloof, Melkboschkraal, Stinkfontein and Bruwelsfontein* constituting or adjacent to the development area, are all evident on the Imperial map (Laingsburg, 1900-1919) and the most recent 1:50K topographical map, lending them significance in the longevity of the place names. The Bruwelsfontein Outspan is clearly indicated on all the historical maps and survey-general diagrams going back well over a century.

The historic farmsteads and the roads that link them are contextually and historically significant as they would have determined patterns of use and movement across the landscape, and in turn the natural landscape determined where these places of habitation would be through location of water sources, protection from the element, poorts through ridges and drifts through rivers. Connection between these places and the people who lived and stayed there has historically been critical in determining the way in which people use and survive in this landscape. Further, in an environment of harsh dry conditions where water is scarce, spaces of water management and cultivation are testament to the determination of its inhabitants to survive in *this* place and the investment of resources, time and effort, that would go into such an ideology. The potential for continued occupation of the farmsteads are significant in maintaining the significance of the cultural landscape.

Three farmsteads of this nature are relevant to the Patatskloof site, these being

Onder Drinkwaterskloof

Onder Drinkwaterskloof farmstead consists of a several buildings that form part of Ibhadi Game Lodge. The shared name suggests a long-standing recognized relationship between these elements on the landscape. The existing structures are of medium local heritage significance and are over 53yrs in age. The 1950 surveyor general diagram for Drinkwaterskloof identifies a structure in the location of the current homestead, suggesting that this site has been occupied since at least then and some of the structures may be older than 60yrs. The parent farm, Drinkwaterskloof was measured up in 1870. The AIA (PGS, 2021) identified a kraal and structure near the location of the homestead on the 1969 topographic map. As a continued example of the relationship between man and environment, the Onder Drinkwaterskloof farmstead and associated cultural landscape is of medium significance and IIIA grading.

*Figure 38: Onder Drinkwaterskloof homestead with Bontebergen in the background.*

*Figure 39: View north east from Onder Drinkwaterskloof/ Ibhadi Lodge with dam in mid field, Perdekraal WEF in the distance and Koedoesberge on the horizon.*

Bruwelsfontein

Although outside of the Patatskloof project site, Bruwelsfontein borders the site and is historically significant in the area, being located on the grand Imperial trunk road and associated with the outspan on the route which would have had significance is the patterns of use and movement in the landscape over time.

Stinkfontein

The site consists of two collapsed houses, the first a grass and mud built house with an associated ash midden and a stone built house. This farmstead is identified on the 1969 topographic map as well as the 1870 surveyor general diagram for Upper Stinkfontein, which also identifies a permanent spring in this area. The historic imperial grand trunk road from Karoopoort to Beaufort West runs past this site, and it most likely fell out of use when the route was no longer being used.

*Figure 40: Stinkfontein site mud and grass collapsed building and associated ash midden with Perdekraal WEF turbines in the background.*

*Figure 41: Collapsed mud and grass structure at Stinkfontein*

*Figure 42: Collapsed stone structure at Stinkfontein with Perdekraal WEF turbines behind ridge.*

The layering of cultural elements in the area of the Stinkfontein spring suggests extended use of this locale for human habitation and activity and affords a 600m buffer around the spring as an area of IIIA cultural landscape significance due to the general grading of graves which are included in this site.

Patatskloof farm roads

The 1900-1919 Imperial map shows a Grand Trunk Road running east – west from the outspan at Platfontein across the northern part of the Patatskloof project site to the outspan at Bruwelsfontein (Figure 33). Directing patterns of use and movement across the landscape, supporting the survival of man and beast over the vast, arid plains of the Karoo, this route is of heritage significance and can be graded as IIIB. The surveyor general diagrams of the farms in the area show various historic farm roads that would have ferried people and their property across the landscape, linking people to each other and creating points of contact for trade, information and social interaction in a sparsely populated and challenging environment. These farm roads are significant and are graded as IIIC.

Poorts and drifts

The Pienaars Kloof shown on the 1870 surveyor general diagram is currently known as Pienaarspoort. A historic route running through the Bontebergen, linking the Imperial Grand Trunk Road to the railway line (now also the N1) it crosses a farm named Smousbosch (a *smous* is the Afrikaans term for a trader). On travelling north along this route, coming through the Bontebergen, Pienaarspoort is a gateway to the Patatskloof site, the Bruwelsfontein outspan and the Koedoesberge to the north. With a view of the Koedoesberge, Tooverberge and Hangberg in the distance, the Pienaarspoort, which has determined patterns of movement in the landscape for millennia, is locally significant and should be graded IIIA.

Outspans

The Platfontein and Bruwelsfontein outspans along the gravel district road, some of which follows the route of the Imperial Grand Trunk road between Karoopoort and Beaufort West, are historically significant in that they supported travellers and their stock in their long distance movements across this vast and arid landscape. Places of rest, water and contact, outspans were essential to the survival and successful use of this landscape over time. These outspans are of IIIA local heritage significance and should be promoted and protected as communal public spaces of use. Jansen (2021) suggests that the *karretjiemense* may still make use of these outspans as places of rest on their nomadic routes across the Karoo.

### *10.2.3 Conservation areas and economic development*

The more recent transformation of the landscape into one of game reserves and farms attests to the resilience and adaptability of the inhabitants of the landscape to exploit the resources in the most economically productive manner without overwhelming or detracting from the sense of place or natural elements of the cultural landscape. The surrounding nature reserves have reintroduced wild game, as were prevalent before the influx of farming communities, and draw on the sense of wilderness and physical and visual expanses of the landscape to encourage tourism. The eco-tourism and game farm ventures associated with and surrounding the proposed WEFs have high economic value for the local inhabitants of the area, currently under the strain of high unemployment. This landscape element is a clear example of man and nature working in a symbiotic relationship with conservation considerations in relation to agricultural, economic and heritage values overlapping. The significance of this element, in the way that it is being exploited to maintain the integrity of the natural vegetation and fauna, signifies a unique relationship between man and nature and is representative of a cultural landscape.

### *10.2.4 Social*

The aspects of social heritage as related to the cultural landscape have not been fully assessed as the SIA was not available at the time of this report. Without detailed local public participation, which is not within the scope of the SIA or CLA at the BAR stage, the full impact of the proposed WEF cannot be fully assessed and the findings of the Public Participation Process (PPP) will need to further inform the process. This must include the non-owner residents on and surrounding the development site, which will be impacted on by the proposed WEF as identified by the SIA and VIA. The PPP must consider fully issues of sense of place in its process.

### *10.2.5 Industrial elements*

Industrial elements of transmission lines and associated infrastructure, such as the Kappa Substation, are evident along the district road DR1475, with the increase in such elements starting to clutter, overwhelm and detract from the rural and historic sense of place in the area. The operational Perdekraal WEFs have already introduced the turbine elements into the landscape. The impact of the turbine night lighting on the wilderness landscape is intrusive and overwhelms the rural character of the landscape, giving it an industrial sense of place after dark.

*Figure 43: Industrial elements along the district road that passes north of the Patatskloof site. The Perdekraal WEFs can be seen in the distance just in front of the Koedoesberge on the horizon.*

*Figure 44: View looking north from the Patatskloof site with Perdekraal WEFs in front of the Koedoesberge on the horizon.*

## 11. Landscape character assessment

The scope of cultural understanding is not only limited to the tangible features found on the site, but also include features that are captured in the production of space, the sense of place, and emotional connection to place.

"Article 22 of the Burra Charter in article 15.1 states that the amount of change to a place and its use should be guided by the cultural significance of a place and its appropriate interpretation. It is for this reason that this study analysed the entire landscape for its collective and contextual significance. Landscape Character Assessment is used as a tool to understand the character of the cultural landscape, and its associated boundaries. Landscape Character Assessment (LCA) helps us to understand our landscapes: their qualities, vulnerabilities and varying capacities to absorb change. It is a tool for understanding the formation of landscapes, defining patterns of natural and cultural features, and identifying the significant elements that give

them character. Landscape Character Assessment is an integral part of identifying Cultural Landscapes, which embody the long history and heritage of the relationship between nature and culture, between people and their environment.

The methodology of Landscape Character Assessment was adjusted to include five core value lines that underscore heritage significance in the context of the study site (ecologic, aesthetic, historic, social and economic value). Each of these value lines and the element of landscape character that they support (site requirements), lead to development criteria or placement indicators for the protection and management of its heritage significance. In each instance, 'Character' is thus understood to comprise a distinct, recognisable, describable and consistent pattern of elements in the landscape that makes one landscape different from another, each with its sense of place. When such a place is recognised as being valuable as a whole, but also due to each of its individual elements, it is defined as having significance.

The purpose of Landscape Character Analysis in this study is to help conserve and manage the significant qualities of our cultural landscapes as heritage. Landscape character differs with a different combination of elements and features that make up the landscape. Elements are classified as the functional (what), while features are more distinctive (how) that makes one area different to the next." (Jansen and Franklin, 2020)

## 11.1 Patatskloof Landscape Character Areas and Cultural Heritage Resources

Cultural landscapes are a significant factor in the evaluation of the impact of proposed development on cultural heritage resources, tangible (e.g. Historic settlements, landscapes, technological) and intangible (e.g. language, indigenous knowledge systems, oral traditions). The area investigated for the proposed Patatskloof WEF is considered as having a high cultural landscape heritage significance.

The Patatskloof site can be divided into landscape character units with cultural heritage resource types. These units were determined by taking the larger landscape context into consideration in order to understand the character and cultural heritage values that underpin the proposed development site.

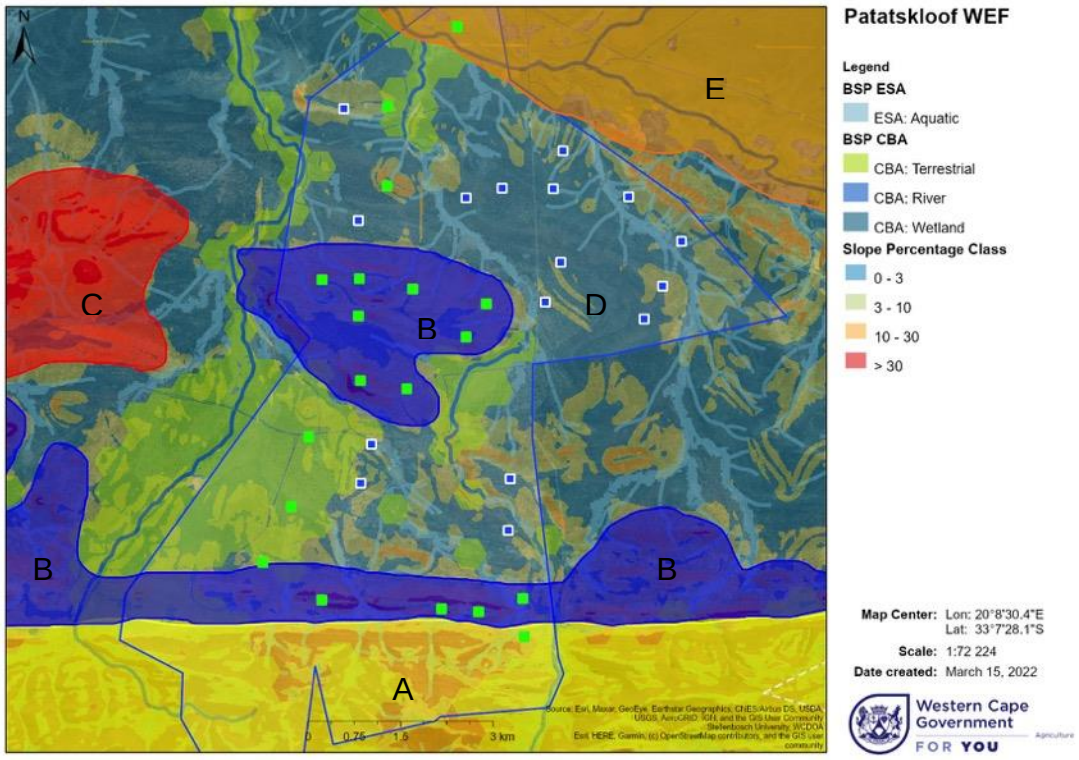


*Figure 45: Patatskloof cultural landscape units map with proposed turbine placement.*

*Table 3: Short description of landscape character units (Jansen et al, 2021 for Pienaarspoort CLA)*

| | |
|---|---|
| A | Bonteberg Ridgeline with Matjiesfontein quartzite fynbos on slopes steeper than 30%<br>The most important aspect of the ridge to consider is that it is highly visible from a large area, due to the relatively flat nature of the study area. Also, the unit features extensive Critical Biodiversity Areas. This is the only part of the study that is representative of the Fynbos Biome. |
| B | Mid-elevation, with typical habitat for Matjiesfontein Shale Renosterveld<br>This unit is also elevated, therefore visible from a large area. The unique vegetation displayed in this unit offers variation in the study area. It is on these slopes that kraal structures are found. Lambing kraals were typically built on the southern slopes of these mid-elevations. Tombstone weathering is a distinctive feature in this landscape unit, especially visible at the point where the three farms meet. |
| C | Distinct Tooverberg, and Pramberg<br>Tooverberg, with its sister, Pramberg is considered a prominent landmark within the study area. It is located well before the ridgeline, towering out of the relatively flat landscape. It represents the same Geology as Landscape Unit B, Kommadagga And Lake Mentz Subgroups which lithologically include Mudrock, micaceous shale, siltstone, quartzose and arkosic sandstone, diamictite. |
| D | Alluvial plains with a range in slope between 0-3%,<br>Historic homesteads in the study area are located within this landscape unit, primarily due to its relatively flat character, proximity to water sources and associated agricultural activities (fields and grazing). Incidentally, this is also where tourism infrastructure is located (Ibhadi Game Farm, Sand River Conservancy). The Drinkwaterskloof drainage line exhibits extensive Critical Biodiversity Areas. The vegetation is mainly Tanqua Karoo. |

| | |
|---|---|
| E | Floodplain of the Groot River with larger shrubs, and flat plains.<br>The unit features extensive Critical Biodiversity Areas within the floodplain, due to the unique soil and vegetation, which is mainly Tanqua Wash Riviere. |

These cultural landscape areas are further considered in terms of more localised heritage resource types.

Cultural landscape resource types:

1: Poorts and koppies – Grade II to IIIA

The vast terrain of the Karoo lends significance to the visually prominent koppies that create intermittent relief from the monotonous largely flat topography of the region. The small local poorts and koppies create a sense of place and orientation in this landscape and are associated to points of continuous access and thoroughfare by humans and animals over time. The Tooverberg and associated Pramberge, as well as Hangberg, to the north are well known as points of navigation on the historic routes to the interior. Pienaarspoort and its associated road linking the district road to the N1 through the Bontebergen are considered a grade IIIA heritage resource.

2. Riverine corridors and water resource management – Bio-cultural heritage resources – Grade IIIA

The dry riverine corridors that spread over the Karoo landscape create points of contact and cultivation in an otherwise dry and barren environment. Largely non-perennial, these watercourses are also known for flooding after heavy rains, spreading much needed water over the surrounding land and, in so doing, supporting ecological and agricultural systems. Historic farmsteads and their associated structures and areas of crop cultivation are found in this landscape unit. Human management of these river drainage lines through dam building is an example of the relationship between man and environment.

3. Historic farmsteads – Grade IIIA – IIIB cultural heritage resources

The farmsteads in this study are all located adjacent or near to riverine corridors in the lower elevations of the undulating plains, with associated grazing lands for livestock on the higher elevations and ridges. Areas of historic crop cultivation are found near dams and along the dry riverbeds. The continued existence of these farmsteads in this historically and environmentally hostile environment lends significance to their place on the landscape and the determination of the people they represent.

4. Conservation areas –Bio-cultural heritage resources

Critical Biodiversity Areas and Ecological Support Areas largely associated with the riverine environment of the study area supports biodiversity conservation. These areas recognise the ongoing relationship between man

and the environment in the way they are managed to maintain a natural state, which in turn, has a benefit for human habitation.

5. Historic routes and gateways – Grade IIIA – II cultural heritage resources

The site is accessed via the district road running from Karoopoort (Grade II) past two historic outspans to Beaufort West and is marked on the 1900-1919 Imperial Map as a 'Grand Trunk Road'. It would have served as the main route between the Cape and the interior before the construction of the railway line which follows the N1 today. This district road has carried inhabitants and travellers between historic towns, farmsteads and further regional destinations since at least the late C18th. Pienaarspoort and its associated road linking the district road to the N1 through the Bontebergen are considered a grade IIIA heritage resource.

6. Viewsheds of significant mountain ranges

Views and vistas of the distant mountains and destinations give significance to the experience of the vast open landscape. The flat open expanses of the Ceres Karoo are a central element to the experience and sense of place of the landscape; the mountain ranges of the Bontebergen and Koedoesberge give scale and containment to this vastness.

7. Archaeological and palaeontological sites – Grade IIIA to NCW cultural heritage resources

All archaeological and palaeontological resources are protected by the NHRA and were investigated for grading by the AIA with the results included in the HIA (PGS, 2021). Stone age material, rock art, built structures and informal graves and cemeteries are included here.

8. Slopes and ridges

The vast terrain of the Komsberg lends significance to the low undulating ridges and associated visually prominent koppies that create intermittent relief from the monotonous largely flat topography of the region. Within this relatively flat expanse the steep slopes and ridges contained in the Pataskloof landscape are significant in their visual and environmental capacities. The slopes and ridges have provided shelter and relief from the elements to the inhabitants of the landscape for millennia.

The findings of the Cultural Landscapes Assessment considered the sensitivity of each of the landscape units to wind farm development and identified the cultural heritage resources that give significance to these units. According to this assessment landscape units A, B and C are not suitable for development of a WEF :

Landscape unit A refers to a rocky ridge that has steep slopes culminating in the highest points on the landscape. Pienaarspoort, which is located on the local road linking the district road to the N1 emerges from this unit,

Landscape unit B delineates the area of character associated with the mid-elevations. These mid-elevations are situated between the plains in the foreground and the higher mountain ridges. The koppie in the center of the site is at the mid-elevation to the prominent Tooverberg. This specific mid-elevation area has smaller ridges (rocky outcrops) that portray a special character with vegetation of a larger scale than the surrounding areas, which also provides area for habitat created in between the rocks. The mid-elevations however are often overlooked for its significance. It is here where the interplay between human action and natural elements are often most intricately woven. In the general cultural landscape this would be where terracing is found. In this part of the Karoo, graves are often found on elevated slopes and the rearrangement of rocks to form shepherd huts/ kraal structures by using the weathered rocks as an asset. It exemplifies the fine relationship with the land in such a harsh context. This assessment would not recommend the proliferation of this landscape unit B for the placement of wind turbines. The continuity of the landscape is an important aspect to respect here, as well as elsewhere throughout the Karoo Cultural landscape. Development on these mid-elevations, even just road construction, would impact negatively on the character of landscape unit B. The impact of turbine placement within this unit will impact negatively on the gateway landscape element of Pienaarspoort, constraining the viewshed from this point over the Patatskloof landscape towards the Tooverberg, Pramberg and Hangberg in the distance.

Landscape unit C displays a prominent natural landmark in the form of Tooverberg and Pramberg that act as a significant feature in the wider landscape.

Landscape units D and E are suitable for sensitive development, taking into consideration the more localized heritage features:

Landscape unit D on the farms Upper Stinkfontein, Melkboschkraal and Drinkwaterskloof still allow for a number of turbines to be accommodated within the cultural landscape. The turbine placement in this unit has been further restricted by the other heritage resources as identified in the cultural landscapes assessment.

Landscape unit E is part of the Grootrivier floodplain, where the destructive impact of flash floods in the Karoo is well-known. The area also features sensitive vegetation that is in good condition, which in turn lends a

distinctive character to this unit. Only a single turbine has been proposed for this unit, however it also falls within a CBA , which has meant that this turbine placement cannot be recommended.

# 12. IMPACTS TO CULTURAL LANDSCAPE AND RECOMMENDATIONS

The impact of the proposed development on the cultural landscape will be assessed according to five core values developed by Job Roos (2007), which include ecologic, aesthetic, historic, social and economic (taken from the Cultural Landscapes study by Jansen and Franklin, 2020). These values merge the requirements of significance assessment according to cultural and natural heritage resources as is required for consideration of cultural landscapes which, by definition, are the manifestation of the relationship between these characteristics of a landscape over time.

An updated cultural landscapes impact assessment report must be completed should the WEF continue to be used after the term granted in this application, should it be granted. The report should include a detailed assessment of the impacts to the cultural landscape and its outcomes and recommendations need to be considered in the decision for recommissioning and be implemented if recommissioning is approved.

## 12.1 Ecological

Most of the area is prized for the fact that its natural character is retained, and that the landscape therefore still performs a range of biodiversity and ecological functions. This is mainly due to the low agricultural potential of the area for anything other than grazing, which has limited the impact on the landscape and vegetation. Critical Biodiversity Areas and Ecological Support Areas are largely associated with the riverine environment of the study area supports biodiversity conservation. These areas recognise the ongoing relationship between man and the environment in the way they are managed to maintain a natural state, which in turn, has a benefit for human habitation. The dry riverine corridors that spread over the Karoo landscape create points of contact and cultivation in an otherwise dry and barren environment. Largely non-perennial, these watercourses are also known for flooding after heavy rains, spreading much needed water over the surrounding land and, in so doing, supporting ecological and agricultural systems. Historic farmsteads and their associated structures and areas of crop cultivation are found in this landscape unit.

### Mitigation and recommendations:

Species and ecosystem loss should be prevented by limiting fragmentation in the landscape, and should

therefore adhere to the following:

#### *12.1.1 Planning/ pre-construction*

- Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected from development of the wind turbines or any associated development during all phases.
- No wind turbines should be placed within the 1:100-year flood line of the watercourses. In the context of the sensitivity to soil erosion in the area, as well as potential archaeological resources, it would be a risk to include any structures close to these drainage lines.
- Renosterveld, and in this case, the Matjiesfontein Shale Renosterveld is found in the mid-elevations, and should be kept free from development. Renosterveld is classified as a threatened ecosystem, only found within the boundaries of South Africa. Care should be taken that we do not needlessly destroy our rare resources that determine the character of the Karoo landscape, and often on the mid-slopes.
- Identified medicinal plants used for healing or ritual purposes should be conserved during all phases if threatened for use and continued access to these resources be maintained.
- Careful planning should incorporate areas for stormwater runoff where the base of the structure disturbed the natural soil. Local rocks found on the site could be used to slow stormwater (instead of concrete, or standard edge treatments), and prevent erosion that would be an unfortunate consequence that would alter the character of the site. By using rocks from site it helps to sensitively keep to the character.

#### *12.1.2 Construction/ decommissioning*

- Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected from development of the wind turbines or any associated development during all phases.
- No wind turbines should be placed within the 1:100-year flood line of the watercourses. In the context of the sensitivity to soil erosion in the area, as well as potential archaeological resources, it would be a risk to include any structures close to these drainage lines
- Remaining areas of endemic and endangered natural vegetation should be conserved.
- Renosterveld, and in this case, the Matjiesfontein Shale Renosterveld is found in the mid-elevations, and should be kept free from development. Renosterveld is classified as a threatened ecosystem, only found within the boundaries of South Africa. Care should be taken that we do not needlessly destroy our rare resources that determine the character of the Karoo landscape, and

often on the mid-slopes.

- Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected from development of the wind turbines or any associated development during all phases.
- Areas of critical biodiversity should be protected from any damage during all phases; where indigenous and endemic vegetation should be preserved at all cost.
- Areas of habitat are found among the rocky outcrops and contribute to the character, as well as biodiversity of the area. Care should be taken that habitats are not needlessly destroyed.
- Identified medicinal plants used for healing or ritual purposes should be conserved during all phases if threatened for use.
- Careful planning should incorporate areas for stormwater runoff where the base of the structure disturbed the natural soil. Local rocks found on the site could be used to slow stormwater (instead of concrete, or standard edge treatments), and prevent erosion that would be an unfortunate consequence that would alter the character of the site. By using rocks from site it helps to sensitively keep to the character.

#### *12.1.3 Operational*

- Areas of endemic and endangered natural vegetation should be conserved.
- Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected.
- Areas of habitat are found among the rocky outcrops and contribute to the character, as well as biodiversity of the area. Care should be taken that habitats are not needlessly destroyed.
- Identified medicinal plants used for healing or ritual purposes should be conserved during all phases if threatened for use. Access to these resources should be made available to those who have had historic access to them.
- Renosterveld, and in this case, the Matjiesfontein Shale Renosterveld is found in the mid-elevations, and should be kept free from development. Renosterveld is classified as a threatened ecosystem, only found within the boundaries of South Africa. Care should be taken that we do not needlessly destroy our rare resources that determine the character of the Karoo landscape, and often on the mid-slopes.

## 12.2 Aesthetic

The overwhelming sense of vast open landscape with low shrubby vegetation, characteristic of the Ceres Karoo and determining to a large extent its evolution in history, creates a sense of place and landscape character intimately associated with this cultural landscape. The various cultural landscape elements have all contributed to a landscape that offers wide open spaces, stillness, distant vistas of impressive and containing mountain ranges with local poorts and koppies defining of the movement of people and animals throughout history. The vast terrain of the Karoo lends significance to the visually prominent koppies that create intermittent relief from the monotonous largely flat topography of the region. The small local poorts and koppies create a sense of place and orientation in this landscape and are associated to points of continuous access and thoroughfare by humans and animals over time. The experience of the landscape after dark is one of stillness and wilderness with the vastness of the landscape paralleled and expressed in the vastness of the stars overhead amidst overwhelming darkness.

Mitigation and recommendations:

Appropriate planning, construction and management of the WEF infrastructure will prevent degradation of the regional character of the cultural landscape and its unique sense of place for which it is valued. The following recommendations, which also impact the construction phase, must be addressed at the planning and layout stage to reduce impacts as far possible and reduce potential negative impacts during following phases.

### *12.2.1 Planning/ pre-construction*

- Where additional infrastructure (i.e. roads) is needed, the upgrade of existing roads to accommodate the development should be the first consideration.
- Avoid development of infrastructure (such as buildings, wind turbines and power lines), on crests or ridgelines due to the impact on the visual sensitivity of skylines. The visual impact of turbines can be reduced by distancing them from viewpoints such as roads and farmsteads, and placing them in lower lying plains to reduce their impact on the surrounding sensitive cultural landscape.
- Significant and place-making viewsheds of surrounding ridgelines and distant mountain should be maintained by limiting the placement of turbines or associated infrastructure on opposing sides of any of the regional roads, so that at any time a turbine-free view can be found when travelling through the landscape or at the historic farmsteads.

- Retain view-lines and vistas focused on prominent natural features such as mountain peaks or hills, such as Tooverberg, Pramberg and the Pienaarspoort, as these are important place making and orientating elements for experiencing the cultural landscape.
- Prevent the construction of new buildings/structures/ new roads on visually sensitive, steep, elevated or exposed slopes, ridgelines and hillcrests.
- Turbine and new road placement to avoid slopes steeper than 10% with existing farm roads to be used for access to turbines as far possible.
- Due to the scenic and historic significance of the regional road, a buffer of 500m to either side of the district road should be maintained for no development associated with the WEF other than sensitive road upgrades, which must not impact on the views from the road.
- Due to the impact of the noise and shadow flicker of wind turbines on residents, the turbines should be placed at 1km from any occupied homestead.
- Alternative Option 3 for the grid corridor is preferred in terms of cultural landscape assessment as it limits the construction to a smaller footprint on the landscape and locates the infrastructure close to existing industrial elements. It should be moved out of the CBA without impacting on a riverine corridor, flood line or a slope over 3%.
- Substation option 1 is preferred due to its location close to other industrial elements. It should be moved out of the CBA without impacting on a riverine corridor, flood line or a slope over 3%.
- The impact of WEF turbine night lighting on the wilderness landscape is intrusive and overwhelms the rural character of the landscape, giving it an industrial sense of place after dark. Reduce the impact of turbine night lighting by minimizing the number of turbines with lighting to only those necessary for aviation safety, such as a few identified turbines on the outer periphery, or use aircraft triggered night lighting. Due to the reduced receptors on the roads at night, the impact of the lighting at night is reserved mainly for farmsteads and other places of overnight habitation such as the surrounding tourist facilities, which would be heavily impacted by the light pollution on a long term and ongoing basis.

#### *12.2.2 Construction/ decommissioning*

- Encourage mitigation measures (for instance use of vegetation) to 'embed' or disguise the proposed structures within the surrounding tourism and agricultural landscape at ground level, road edges etc;
- The continuation of the traditional use of material could be enhanced with the use of the rocks on the site as building material. This would also help to embed structures into the landscape and should not consist of shipping containers or highly reflective untreated corrugated sheeting that clutters the landscape and is

exacerbates the foreign intrusion on the natural matte landscape.

- Using material found on the site adds to the sense of place and reduces transportation costs of bringing materials to site.
- The local material such as the rocks found within the area could be applied to address storm water runoff from the road to prevent erosion.
- Duration and magnitude of construction/ decommissioning activity must be minimized as far possible to reduce the impact of heavy vehicles on the roads as well as the associated dust from the activity. Lightest vehicles possible should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. Construction/ decommissioning traffic must operate at speeds that reduce dust and noise as far possible.

#### *12.2.3 Operational*

- Infrastructure improvement or maintenance work, including new roads and upgrades to the road network, should be appropriate to the rural context (scale, material etc.) and avoid steep slopes over 10% as well as ridges.
- Prevent the construction of new buildings/structures on visually sensitive, steep (over 10%), elevated or exposed slopes, ridgelines and hillcrests or within 1000m of the farmsteads and 500m of the district roads.
- Avoid visual clutter in the landscape by intrusive signage, and the intrusion of commercial, corporate development along roads.
- Duration and magnitude of operational activity must be minimized as far possible to reduce the impact of heavy vehicles on the roads as well as the associated dust from the activity. Lightest vehicles possible should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. Operational traffic must operate at speeds that reduce dust and noise as far possible.
- The impact of WEF turbine night lighting on the wilderness landscape is intrusive and overwhelms the rural character of the landscape, giving it an industrial sense of place after dark. Reduce the impact of turbine night lighting by minimizing the number of turbines with lighting to only those necessary for aviation safety, such as a few identified turbines on the outer periphery, or use aircraft triggered night lighting. Due to the reduced receptors on the roads at night, the impact of the lighting at night is reserved mainly for farmsteads and other places of overnight habitation such as the surrounding tourist facilities, which would be heavily impacted by the light pollution on a long term and ongoing basis.

## 12.3 Historic

The site is accessed via the district road running from Karoopoort (Grade II) past two historic outspans to Beaufort West and is marked on the 1900-1919 Imperial Map as a 'Grand Trunk Road'. It would have served as the main route between the Cape and the interior before the construction of the railway line that follows the N1 today. This road has carried inhabitants and travellers between historic towns, farmsteads and further regional destinations since at least the late C18th. The history of the landscape is intimately associated to stock farming and waves of settlement throughout history. The stone-age and prehistoric archaeology attests to the inhabitants of the landscape before written history, with the first farmsteads and stone kraals and walls remnants of the first people to settle on the land more permanently rather than being transhumant. The use of influential landscape elements highlights the significance of these elements in the psyche of the historical inhabitants in this vast, seemingly barren, flat place. The historic farmsteads and the roads that link them are contextually and historically significant as they would have determined patterns of use and movement across the landscape, and in turn the natural landscape determined where these places of habitation would be through location of water sources, protection from the element, poorts through ridges and drifts through rivers. Connection between these places and the people who lived and stayed there has historically been critical in determining the way in which people use and survive in this landscape. Further, in an environment of harsh dry conditions where water is scarce, spaces of cultivation are testament to the determination of its inhabitants to survive in *this* place and the investment of resources, time and effort, that would go into such an ideology. The potential for continued occupation of the farmsteads are significant in maintaining the significance of the cultural landscape.

### Mitigation and recommendations:

Appropriate planning, construction and management of the WEF infrastructure will prevent degradation of the historic elements of the cultural landscape.

#### *12.3.1 Planning/ pre-construction*

- Due to the scenic and historic significance of the regional road, a buffer of 500m to either side of the district road should be maintained for no development associated with the WEF other than sensitive road upgrades, which must not impact on the views from the road.
- The integrity of the historic farmsteads and their associated cultivated areas and relationship to the

riverine corridors and other natural elements, such as Tooverberg, should be maintained and protected. Location of proposed turbines should be limited to a 1000m buffer around the farmsteads as far possible to limit impact to the farmsteads.

- Any development that impacts the inherent character of the werf component should be discouraged and a development buffer of 50m around the outer boundary of farm werfs and 300m around any graded heritage structure, must be maintained, including the associated cultivated areas, cemeteries and unmarked graves, for all new infrastructure.
- The existing names of places, routes, watercourses and natural features in the landscape that are related to its use, history and natural character should be retained and used as heritage resources related to intangible heritage. Public access to these sites should be encouraged.
- Burial grounds and places of worship are automatically regarded as Grade IIIa or higher. Any development that threatens the inherent character of family burial grounds must be assessed and should be discouraged. No development closer than 100m from the boundary of any burial grounds or unmarked graves. A preconstruction micro-survey of each turbine footprint and any new access roads should be conducted to ensure no further unmarked graves are threatened. Unmarked graves in the Stinkfontein site should be protected from development impact.
- Commonages and outspans were located at water points, and these places were likely gathering points before the arrival of colonists and continued to provide communal resources. In the mid-20th century, many old commonages came under the ownership of the Municipality, and have since been rented out to private individuals or organisations. The Municipality should facilitate the use of common land in a way that promotes the well-being and quality of life of the public. These sites can play a restorative role within the community, for instance for those who have limited alternative opportunities for recreation.
- Maintain traditional movement patterns across rural landscapes or to places of socio-historical value. (a) Avoid privatization or the creation of barriers to traditional access routes, such as the road through Pienaarspoort. (b) Retain old roadways, which have been replaced by newer roads, for use as recreation trails, such as the historic Grand Trunk Road which runs past Stinkfontein.
- Respect existing patterns, typologies and traditions of settlement-making by promoting the continuity of heritage features. These include: (a) indigenous; (b) colonial; and (c) current living heritage in the form of tangible and intangible associations to place.
- Alterations and additions to conservation-worthy structures should be sympathetic to their architectural character and period detailing.

### *12.3.2 Construction/ decommissioning*

- Historic farmsteads must be protected from the impacts of heavy construction vehicles and increased numbers of people. No construction traffic should pass through or closer than 50m to the outer boundaries of a farm werf, or 200m from graded structures, which includes the associated historically cultivated lands, cemeteries, unmarked burials. The most appropriate use of existing farm roads must be found to avoid farm werfs as far as possible and reduce construction impact on these heritage features.
- Duration and magnitude of construction/ decommissioning activity must be minimized as far possible to reduce the impact of heavy vehicles on the roads as well as the associated dust from the activity. Lightest vehicles possible should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. Construction decommissioning traffic must operate at speeds that reduce dust and noise as far possible.
- Accommodation of construction staff must not negatively impact on existing farm residents or degrade the integrity of the farmstead complexes and should, without negative impact to ecological or aesthetic resources, be located outside of the farmstead complexes or site. Farm residents should be consulted on the preferable location for construction staff accommodation.
- Traditional planting patterns should be protected by ensuring that existing trees are not needlessly destroyed, as these signify traces of cultural intervention in a harsh environment. These planting patterns include the trees planted around the werfs and along travel routes. Interpretation of these landscape features as historic remnants should occur. A buffer of 50m around such planting patters should be maintained.
- Burial grounds and places of worship are automatically regarded as Grade IIIa or higher. Any development that threatens the inherent character of family burial grounds must be assessed and should be discouraged. No turbines have been proposed for placement near known unmarked burials or family cemeteries. A preconstruction micro-survey of each turbine footprint and any new access roads should be conducted to ensure no further unmarked graves are threatened.
- Mountain slopes have been used for traditional practices for many years, and care should be taken that any significant cultural sites, such as burials and veldkos/medicinal plant resources, are not disturbed.
- Farms in the area followed a system of stone markers to demarcate the farm boundaries in the area. Where these structures are found on the site, care should be taken that they are not destroyed, as they add to the layering of the area.
- Roads running through the area have historic stone way markers. Where these are found care should be taken that they are left in tact and in place. Road upgrades must not move or threaten their position and they should be visible from the road they are related to by passing travellers.

- Where the historic function of a building/site is still intact, the function has heritage value and should be protected.
- Surviving examples (wagon routes, outspans, and commonage), where they are owned in some public or communal way (or by a body responsible for acting in the public interest) and where they are found to be actively operating in a communal way, will have cultural and heritage value and should be enhanced and retained. The historic route running through Patatskloof should be maintained and integrity as a communal road for farm residents must be retained.
- Maintain traditional movement patterns across rural landscapes or to places of socio-historical value. (a) Avoid privatization or the creation of barriers to traditional access routes, such as the road through Pienaarspoort. (b) Retain old roadways, which have been replaced by newer roads, for use as recreation trails, such as the historic Grand Trunk Road which runs past Stinkfontein.

#### *12.3.3 Operational*

- Historic farmsteads must be protected from the impacts of operational facility vehicles and increased numbers of people. No WEF operations traffic should pass through or closer than 50m to the outer boundaries of a farm werf, or 200m from graded structures, which includes the associated historically cultivated lands, cemeteries, unmarked burials. The most appropriate use of existing farm roads must be found to avoid farm werfs as far as possible and reduce construction impact on these heritage features.
- Traditional planting patterns should be protected by ensuring that existing trees are not needlessly destroyed, as these signify traces of cultural intervention in a harsh environment. These planting patterns include the trees planted around the werfs and along travel routes. Interpretation of these landscape features as historic remnants should occur.
- Burial grounds and places of worship are automatically regarded as Grade IIIa or higher. Any development that threatens the inherent character of family burial grounds must be assessed and should be discouraged and a buffer of 100m around all burial ground or unmarked graves should be in place. No turbines have been proposed for placement near known unmarked burials or family cemeteries. A preconstruction micro-survey of each turbine footprint and any new access roads should be conducted to ensure no further unmarked graves are threatened.
- Mountain slopes have been used for traditional practices for many years, and care should be taken that any significant cultural sites, such as burials and veldkos/medicinal plant resources, are not disturbed.
- Farms in the area followed a system of stone markers to demarcate the farm boundaries in the area. Where these structures are found on the site, care should be taken that they are not destroyed, as they add to the layering of the area.

- Roads running through the area may have historic stone way markers. Where these are found care should be taken that they are left in tact and in place. Road upgrades must not move or threaten their position and they should be visible from the road they are related to by passing travellers.
- Where the historic function of a building/site is still intact, the function has heritage value and should be protected.
- Surviving examples (wagon routes, outspans, and commonage), where they are owned in some public or communal way (or by a body responsible for acting in the public interest) and where they are found to be actively operating in a communal way, will have cultural and heritage value and should be enhanced and retained. The historic route running through Patatskloof should be maintained and integrity as a communal road for farm residents must be retained.
- Accommodation of WEF staff must not negatively impact on existing farm residents or degrade the integrity of the farmstead complexes and should, without negative impact to ecological or aesthetic resources, be located outside of the farmstead complexes or site. Farm residents should be consulted on the preferable location for construction staff accommodation.
- Lightest vehicles possible should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. Operational traffic must operate at speeds that reduce dust and noise as far possible.
- Maintain traditional movement patterns across rural landscapes or to places of socio-historical value. (a) Avoid privatization or the creation of barriers to traditional access routes, such as the road through Pienaarspoort. (b) Retain old roadways, which have been replaced by newer roads, for use as recreation trails, such as the historic Grand Trunk Road which runs past Stinkfontein.

## 12.4 Socio-economic

The non-landowner residents on the Patatskloof site are in a symbiotic relationship with the environment and through cultivation and resource management have continued to exist and interact with the landscape in a way that has allowed for the relatively unchanged character of the landscape. This has created a unique sense of place and relationship between the inhabitants and the place. The continued land use pattern and relationship to the land buffers the decline of the socio-economic position of the inhabitants, as they are able to maintain some level of subsistence with these resources. The ability for these residents to provide for themselves in this way must not be negatively impacted upon by the WEF development and must be supported, including financially, by the development. Their existence on the landscape, as the historic inhabitants of the area, previously disenfranchised and disempowered, is a fundamental element to the cultural landscape.

Mitigation and recommendations:

Appropriate consultation and inclusion of local communities, including non-landowner residents on site and in the region, in all phases will prevent degradation of the socio-economic elements of the cultural landscape as well as potential loss of intangible indigenous knowledge. Loss of historic local inhabitants of the area due to reduction in economic opportunity or places for habitation and cultivation as a result of the WEF development will negatively impact on the character of the Komsberg landscape.

### *12.4.1 Planning/ pre-construction*

- The findings of this report must be shared with identified interested and affected parties, including non-landowner residents on the development properties, in the EIA public participation process in order to further ascertain any intangible cultural resources that may exist on the landscape that have not been identified. A specialist qualified in recognising and discussing significance of intangible heritage resources should be present during the public meetings. The findings should inform the recommendations for appropriate mitigation for impacts to the cultural landscape.
- The continued use of the landscape for human habitation and cultivation by historic residents of the area should be retained and encouraged as far possible to sustain the continual use pattern and human-environment relationship which is the ultimate significance of this cultural landscape element. The WEF development must allow and support this, including financially, and not degrade this continued relationship.
- The local community on and around the development should benefit from job opportunities created by the proposed development and the development should not cause reduction in economic viability of surrounding properties in excess of those offered by the development. Short-term job opportunities at the expense of long term economic benefit and local employment opportunities must be prevented.
- Local residents must be offered employment on the construction/ decommissioning and operational phases before 'importing' staff from elsewhere.
- Local residents must be offered employment training opportunities associated with WEF developments at all phases.

### *12.4.2 Construction/ decommissioning*

- An updated cultural landscapes impact assessment report must be completed should the WEF continue

to be used after the term granted in this application. This report should include a detailed assessment of the socio-economic impacts to the cultural landscape and its outcomes and recommendations need to be considered in the decision for recommissioning and be implemented if recommissioning is approved.

- The continued use of the landscape for human habitation and cultivation by historic residents of the area should be retained and encouraged as far possible to sustain the continual use pattern and human-environment relationship which is the ultimate significance of this cultural landscape element. The WEF development must allow and support this, including financially, and not degrade this continued relationship.
- The local community on and around the development should benefit from job opportunities created by the proposed development and the development should not cause reduction in economic viability of surrounding properties in excess of those offered by the development. Short-term job opportunities at the expense of long term economic benefit and local employment opportunities must be prevented.
- Local residents must be offered employment on the construction/ decommissioning and operational phases before 'importing' staff from elsewhere.
- Local residents must be offered employment training opportunities associated with WEF developments at all phases.
- Sheep, cattle or game farming should be allowed to continue below the wind turbines, or be rehabilitated to increase biodiversity in the area.

#### *12.4.3 Operational*

- The local community on and around the development should benefit from job opportunities created by the proposed development and the development should not cause reduction in economic viability of surrounding properties in excess of those offered by the development. Short-term job opportunities at the expense of long term economic benefit and local employment opportunities must be prevented.
- The continued use of the landscape for human habitation and cultivation by historic residents of the area, should be retained and encouraged as far possible to sustain the continual use pattern and human-environment relationship which is the ultimate significance of this cultural landscape element. The WEF development must allow and support this, including financially, and not degrade this continued relationship.
- Local residents must be offered employment on the construction/ decommissioning and operational phases before 'importing' staff from elsewhere.

- Local residents must be offered employment training opportunities associated with WEF developments at all phases.
- Crop cultivation, sheep, cattle or game farming should be allowed to continue below the wind turbines, or be rehabilitated to increase biodiversity in the area.

## 12.5 Cumulative Impacts

This section evaluates the possible cumulative impacts on heritage resources associated with cultural landscapes with the addition of the Patatskloof WEF and associated grid infrastructure. The cumulative impact on heritage resources evaluated a 35-kilometer radius. Although there are at least 8 WEF applications approved currently only one has been built and as a result the full impact of the development cannot be fully assessed.

The following must be considered in the analysis of the cumulative effect of development on heritage resources:

 Fixed datum or dataset: The region has never been covered by a heritage resources study that can account for all heritage resources. Further to this none of the heritage studies conducted can with certainty state that all heritage resources within the study area have been identified and evaluated.

 Defined thresholds: The value judgment on the significance of a heritage site will vary from individual to individual and between interest groups. Thus implicating that heritage resources' significance can and does change over time. And so will the tipping threshold for impacts on a certain type of heritage resource;

 Threshold crossing: In the absence of a comprehensive dataset or heritage inventory of the entire region we will never be able to quantify or set a threshold to determine at what stage the impact from developments on heritage resources has reached or is reaching the danger level or excludes the new development on this basis. (Godwin, 2011)

Specialist HIA reports in the area have considered cultural landscapes in their consideration of the developments being assessed. In their summary of the cumulative impact for adjacent Pienaarspoort WEF develpoments, CTS (2021) found that "At this stage, there is the potential for the cumulative impact of proposed renewable energy facilities to negatively impact the cultural landscape due to a change in the landscape character from natural wilderness to semi-industrial. Based on the available information, a number of renewable energy facilities have been approved in the immediate vicinity of the proposed WEF and it is noted that it is preferable to have renewable energy facility development focused in an area such

as a REDZ. In addition to this proposed development, there are further renewable energy facilities presently proposed for this immediate environment. The cumulative impact of these proposed renewable energy facilities has the potential to negatively impact on the Cultural Landscape, as well as the distribution and integrity of archaeological and palaeontological resources. As indicated above, the Landscape Character Assessment includes five core value lines that underscore heritage significance in the context of the Western Cape (ecologic, aesthetic, historic, social and economic value). Each of these value lines, and the element of landscape character that they support, lead to development criteria or design indicators for the protection and management of its heritage significance. The design criteria are recommended as mitigation measures against negative cumulative impact to the significant Karoo Cultural Landscape."

*Table 4: Existing and Proposed Renewable Energy Projects within 35km of Site*

| Applicant | Project | Technology | Capacity | Status of Application / Development |
|---|---|---|---|---|
| Oya Energy (Pty) Ltd | Oya Energy Facility | Hybrid (Solar / Fuel-Based) | 305MW | EIA Process underway |
| Brandvalley Wind Farm (Pty) Ltd | Brandvalley WEF | Wind | 140MW | Approved |
| Kudusberg Wind Farm (Pty) Ltd | Kudusberg WEF | Wind | 325W | Approved |
| South Africa Mainstream Renewable Power Perdekraal West (Pty) Ltd | Perdekraal West WEF & Associated Grid Connection Infrastructure | Wind | 150M | Approved |
| South Africa Mainstream Renewable Power Perdekraal East (Pty) Ltd | Perdekraal East WEF & Associated Grid Connection Infrastructure | Wind | 110MW | Operational |
| South Africa Mainstream Renewable Power Developments (Pty) Ltd | Karee WEF | Wind | 200MW | EIA Process underway |
| Rietkloof Wind Farm (Pty) Ltd | Rietkloof WEF | Wind | 186MW | Approved |
| ENERTRAG SA (Pty) Ltd | Tooverberg WEF & Associated Grid Connection Infrastructure | Wind | 140MW | Approved |
| Witberg Wind Power (Pty) Ltd | Witberg WEF | Wind | 120MW | Approved |
| Montgue Road Solar (Pty) Ltd | Montague Road Solar | Solar PV | 75MW | Approved |
| Touwsrivier Solar | Touwsrivier Solar | Solar PV | 36MW | Approved |

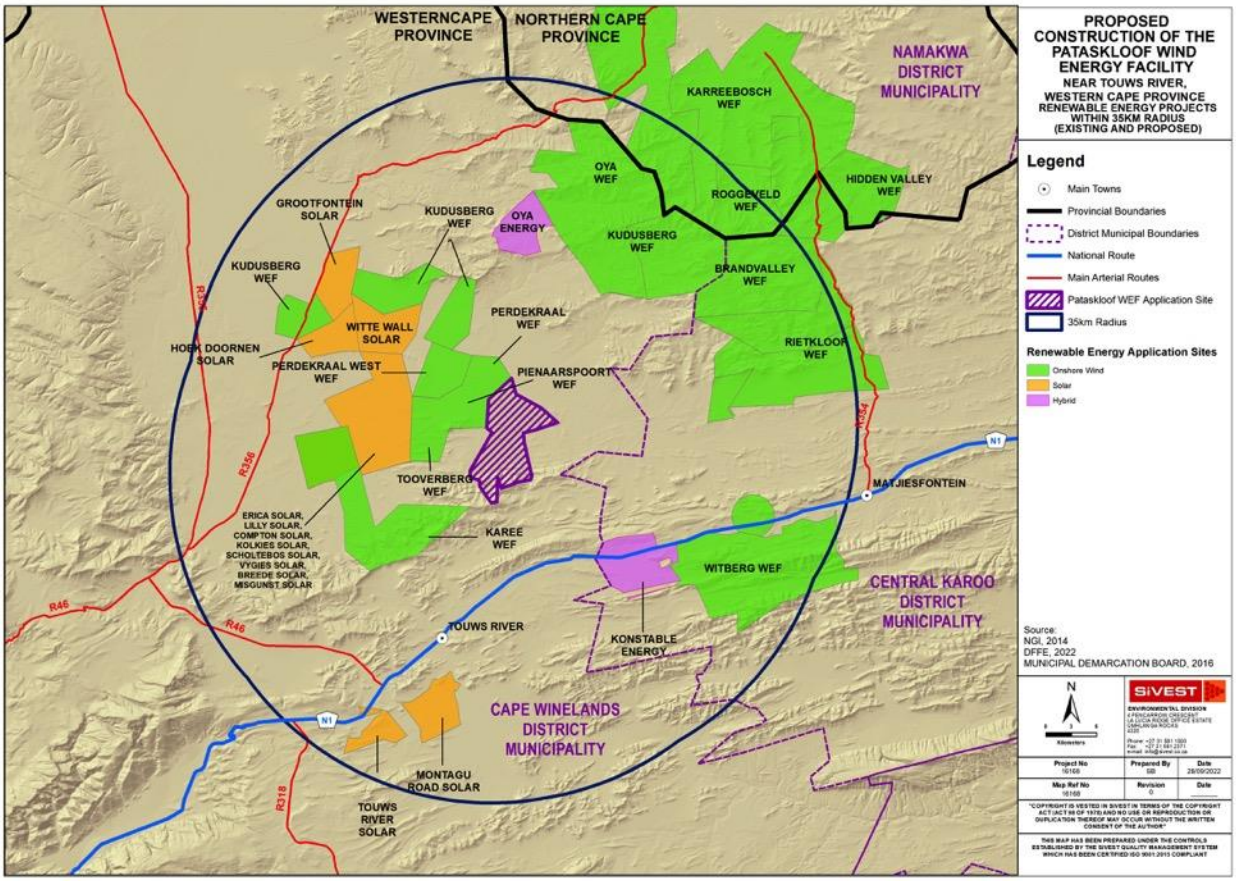


*Figure 46: Renewable energy application sites in process in the surrounding area.*

The numerous applications and proposed establishment of several wind energy facilities in the Komsberg REDZ, as well as the adjacent regions in the Karoo have sparked a concern with regards to cumulative impacts that these projects may have on the heritage resources and the cultural landscape. The approval of an increased number of RE projects in the region may lead to the mass industrialisation of the landscape that changes the character of the landscape and hence impacts on the sense of place and aesthetic value negatively. The Karoo region has been considered as a wilderness landscape with a significant footprint of human habitation, cultural contact and conflict, whereby the cumulative impact of increased WEFs will involve significant sterilisation of the aesthetic qualities of the landscape. The cumulative impacts on tangible heritage resources can be considered low in general due to the thin density in the area, except when considering the cultural landscape which is negatively impacted by the construction of renewable energy, wind turbines and associated electrical infrastructure on the 'sense of place', land use patterns and its scenic beauty. The cumulative impact on the cultural landscape is thus unavoidably high without mitigation, with losses to perceptual qualities and historic land use. Similarly, cumulative impacts to living heritage sites will be unavoidably high without mitigation, with losses including the physical expressions of cultural heritage as well as to sense of place and cultural landscapes. While

mitigation in the form of avoidance and protection of these sites can go some way to reducing cumulative impacts, these are likely to remain moderate.

The main negative impacts by WEF development and associated infrastructure to the cultural landscape are on the aesthetic and historic value of the area, including the local residents'[2] opportunity to continue their historic patterns of land use and relationship to the landscape. The historic inhabitants of the area are an essential element to the historic and cultural significance of the cultural landscape and their continued existence in this place with the opportunity to practice traditional land use patterns and knowledge systems are critical in the conservation of the Komsberg region's intangible heritage.

Renewable energy facilities have the potential to cause large scale visual impacts and the location of several such developments in close proximity to each other could significantly alter the sense of place and visual character in the broader region. Although power lines and substations are relatively small developments when compared to renewable energy facilities, they will introduce a more industrial character into the landscape, thus altering the sense of place.

Eight renewable energy project applications were identified as 'approved' within a 35 km radius of the proposed Patatskloof WEF and grid connection infrastructure. It is assumed that all of these renewable energy developments include grid connection infrastructure. These proposed WEFs, in conjunction with the associated grid connection infrastructure, will inevitably introduce an increasingly industrial character into a largely natural, pastoral landscape, thus giving rise to significant cumulative impacts. The number of renewable energy facilities within the surrounding area and their potential for large scale visual impacts will significantly alter the sense of place and visual character in the broader region, as well as exacerbate the visual impacts on surrounding visual receptors, once constructed.

From a visual perspective, the further concentration of renewable energy facilities as proposed will inevitably change the visual character of the area and alter the inherent sense of place, introducing an increasingly industrial character into the broader area, and resulting in significant cumulative impacts."

[2] 'Local residents' refers to, and must include, the people currently living on site and utilizing the natural resources there (e.g. site managers or rentee's) and not necessarily landowners. These residents often represent the historic occupants of this landscape, who have been historically disenfranchised and disempowered by the lack of land ownership opportunity.

Significant negative cumulative impacts will occur due to the night lighting associated with WEFs. As identified and supported by a VIA (Schwartz, 2021) the negative impact of this WEF element on the cultural landscape will alter the sense of place for the duration of the operation of the facility.

However, with the proposed recommendations of this CLA the cumulative negative impact of the proposed WEFs on the cultural landscape can be reduced.

# 13. Impact Rating Tables

## 13.1 Planning / Pre construction

Table 5: Rating of impacts for Planning/ Pre-construction Phase

| ENVIRONMENTAL PARAMETER | ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE | ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION | | | | | | | | | RECOMMENDED MITIGATION MEASURES | ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | E | P | R | L | D | I / M | TOTAL | STATUS (+ | S | | E | P | R | L | D | I / M | TOTAL | STATUS (+ | S |
| Planning Phase | | | | | | | | | | | | | | | | | | | | |
| Ecological | Inappropriate infrastructure layout planning degrades ecological elements of the cultural landscape. | 2 | 4 | 3 | 3 | 3 | 4 | 60 | - | Negative High | Please see page 67 | 2 | 2 | 2 | 1 | 3 | 2 | 20 | - | Negative Low |
| Aesthetic | Inappropriate infrastructure layout planning negates aesthetic and sense of place requirements of the cultural landscape. | 2 | 4 | 4 | 4 | 3 | 4 | 68 | | Negative Very High | Please see page 69 | 2 | 3 | 2 | 3 | 3 | 3 | 39 | | Negative medium |
| Historic | Inappropriate infrastructure | 2 | 4 | 3 | 4 | 4 | 4 | 68 | | Negative Very | Please see page 72 | 2 | 2 | 2 | 1 | 3 | 2 | 20 | | Negative Low |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | layout planning degrades historic elements of the cultural landscape. | | | | | | | | | High | | | | | | | | | | |
| Socio-economic | Non-landowner residents' lack of representation in planning and public participation process leads to loss of local knowledge, socio-economic empowerment and character of the cultural landscape. | 2 | 4 | 4 | 3 | 4 | 4 | 68 | - | Negative Very High | Please see page 77 | 2 | 2 | 1 | 2 | 4 | 2 | 22 | - | Positive Low |

## 13.2 Construction/ Decommissioning

Table 6: Rating of impacts for Construction/ Decommissioning Phase

| ENVIRONMENTAL PARAMETER | ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE | ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION | | | | | | | | | RECOMMENDED MITIGATION MEASURES | ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | E | P | R | L | D | I / M | TOTAL | STATUS (+ | S | | E | P | R | L | D | I / M | TOTAL | STATUS (+ | S |
| Construction/ Decommissioning Phase | | | | | | | | | | | | | | | | | | | | |
| Ecological | Fragmentation and destruction of the landscape degrading the environment and | 2 | 4 | 3 | 3 | 4 | 3 | 48 | - | Negative High | Please see page 67 | 2 | 2 | 2 | 1 | 4 | 2 | 22 | - | Negative Low |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | thus continuous relationship between man and environment | | | | | | | | | | | | | | | | | | | |
| Aesthetic | WEF infrastructure construction and decommissioning activity degrades the character of the cultural landscape and the sense of place | 2 | 4 | 3 | 3 | 3 | 4 | 60 | | Negative high | Please see page 70 | 2 | 4 | 2 | 2 | 2 | 2 | 24 | | Negative Medium |
| Historic | Integrity of farmsteads and farm roads degraded by insensitive construction or decommissioning activities. | 2 | 4 | 4 | 3 | 4 | 4 | 68 | | Negative very high | Please see page 74 | 2 | 2 | 3 | 2 | 2 | 2 | 22 | | Negative low |
| Socio-economic | Integrity of local residents to continue their patterns of land use is degarded by the construction and decommissioning activities. | 2 | 3 | 4 | 4 | 4 | 4 | 68 | | Negative very high | Please see page 77 | 1 | 3 | 3 | 1 | 3 | 2 | 22 | | Positive low |

## 13.3 Operation

Table 7: Rating of impacts for Operational Phase

| ENVIRONMENTAL PARAMETER | ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE | ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION | | | | | | | | | RECOMMENDED MITIGATION MEASURES | ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | E | P | R | L | D | I / M | TOTAL | STATUS (+) | S | | E | P | R | L | D | I / M | TOTAL | STATUS (+) | S |
| Operation Phase | | | | | | | | | | | | | | | | | | | | |
| Ecological | Inappropriate operational activities degrade the significant ecological elements of the cultural landscape | 1 | 4 | 4 | 2 | 3 | 4 | 56 | | Negative high | Please see page 68 | 1 | 1 | 4 | 2 | 3 | 2 | 22 | | Negative low |
| Aesthetic | Inappropriate operational activities degrade the significant aesthetic elements of the cultural landscape altering the character and sense of place | 2 | 4 | 3 | 3 | 4 | 3 | 48 | | Negative high | Please see page 71 | 2 | 4 | 3 | 3 | 4 | 2 | 32 | | Negative medium |
| Historic | Inappropriate operational activities degrade the significant historic elements of the cultural | 2 | 4 | 4 | 4 | 4 | 4 | 72 | | Negative very high | Please see page 75 | 2 | 2 | 4 | 2 | 4 | 2 | 28 | | Negative medium |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | landscape altering the character and sense of place | | | | | | | | | | | | | | | | | | | |
| Socio-economic | Inappropriate operational activities degrade the significant socio-economic opportunities of the cultural landscape | 2 | 4 | 3 | 4 | 4 | 4 | 68 | | Negative very high | Please see page 78 | 2 | 3 | 2 | 2 | 3 | 2 | 24 | | Positive medium |

## 13.4 Cumulative impacts

Table 8: Rating of cumulative impacts

| ENVIRONMENTAL PARAMETER | ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE | ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION | | | | | | | | | RECOMMENDED MITIGATION MEASURES | ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | E | P | R | L | D | I / M | TOTAL STATUS (+ | | S | | E | P | R | L | D | I / M | TOTAL STATUS (+ | | S |
| CumulativePhase | | | | | | | | | | | | | | | | | | | | |
| Ecological | Inappropriate cumulative development degrade the significant ecological elements of the cultural landscape | 3 | 4 | 4 | 3 | 4 | 4 | 72 | | Negative very high | Please see page 79for mitigation recommendations for specifically cumulative impacts.<br><br>NOTE: If the recommendations in this CLA are applied | 3 | 2 | 4 | 2 | 3 | 2 | 28 | | Negative medium |
| Aesthetic | Inappropriate | 3 | 4 | 3 | 3 | 3 | 4 | 64 | | Negative | | 3 | 4 | 2 | 2 | 3 | 2 | 28 | | Negative |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | cumulative development degrades the significant aesthetic elements of the cultural landscape altering the character and sense of place | | | | | | | | | very high | to the majority of the surrounding RE developments, impacts can be reduced to ratings given in this table. With no specialist CLA reports done on the surrounding applications, cumulative impact on the cultural landscape of the region has not been considered and cannot be included in this rating. | | | | | | | | | medium |
| Historic | Inappropriate cumulative development degrades the significant historic elements of the cultural landscape altering the character and sense of place | 3 | 4 | 4 | 4 | 4 | 4 | 76 | | Negative very high | | 3 | 2 | 3 | 2 | 3 | 2 | 26 | | Negative medium |
| Socio-economic | Inappropriate cumulative development degrade the significant socio-economic opportunities of the cultural landscape | 3 | 4 | 3 | 4 | 4 | 4 | 72 | | Negative very high | | 3 | 3 | 1 | 1 | 4 | 2 | 24 | | Positive medium |

## 14. COMPARATIVE ASSESSMENT OF ALTERNATIVES

Key

| | |
|---|---|
| PREFERRED | The alternative will result in a low impact / reduce the impact / result in a positive impact |
| FAVOURABLE | The impact will be relatively insignificant |
| LEAST PREFERRED | The alternative will result in a high impact / increase the impact |
| NO PREFERENCE | The alternative will result in equal impacts |

| Alternative | Preference | Reasons (incl. potential issues) |
|---|---|---|
| SUBSTATION SITE ALTERNATIVES | | |
| Substation Option 1 | Favourable located outside of CBA | Must be moved out of the CBA without impacting on a riverine corridor flood line or a slope over 3%. |
| Substation Option 2 | Least preferred | Location on sensitive raised elevation in landscape unit B is not appropriate. |
| CONSTRUCTION LAYDOWN AREA SITE ALTERNATIVES | | |
| GRID CORRIDOR SITE ALTERNATIVES | | |
| Grid corridor Option 1 | Favourable | Located along existing gridlines. Must be moved out of CBA. Longer than preferred and favourable alternative 3 and 6. |
| Grid corridor Option 2 | Least preferred | Increased clutter and degradation of rural cultural landscape and located along CBA riverine corridor and transects landscape unit B which is unsuitable for RE development... |
| Grid corridor Option 3 | Preferred | Shortest route along existing gridlines adjacent to existing WEF development. |
| Grid corridor Option 4 | Least preferred | Increased clutter and degradation of rural cultural landscape and located along CBA riverine corridor and transects landscape unit B which is unsuitable for RE development. |
| Grid corridor Option 5 | Least preferred | Increased clutter and degradation of rural cultural landscape and transects landscape units B and C which are unsuitable for RE development. |

| Alternative | Preference | Reasons (incl. potential issues) |
|---|---|---|
| Grid corridor Option 6 | Favourable | Located along existing gridlines. Must be moved out of CBA. |

## 14.1 No-Go Alternative

It is mandatory to consider the "no-go" option in the BA process. The no development alternative option assumes the site remains in its current state, i.e. there is no construction of a WEF facility and associated infrastructure in the proposed project area and the status quo would proceed. This option would result in no development impact on the Pataskloof cultural landscape and it should continue to operate in the similar way maintaining the current significance.

If the Patatskloof site is not developed, the WEF and associated infrastructure will not be built and the aesthetic and visual impact of new RE developments will be contained to their existing scale and massing.

The potential for socio-economic opportunities related to the construction and operation of the RE facility for local residents in the area would be lost. The potential for increased RE energy capacity nationally would be lost in this instance but possibly gained elsewhere.

# 15. CONCLUSION

## 15.1 Summary of Findings

The Ceres Karoo region is a significant cultural landscape that reflects the relationship between man and nature over a period of time. This relationship has generally been sustainable, where biodiversity and ecological systems have been maintained in the utilisation of the landscape expressed in specific land use patterns. The surrounding land use indicates a social appreciation of the natural environment with low impact stock farming with limited farmstead crop cultivation. The vastness and relative homogenous nature of the cultural landscape is, however, often undervalued. If careful contextual planning is not followed, it will rapidly result in a cluttered wasteland. This does not mean that development is discouraged, but rather that the implementation of wind and solar energy farms should be planned holistically. It is the duty of the planning

department to consider this application in terms of other renewable energy developments that are planned/proposed for the Komsberg area, notably the proposed RE developments included in the cumulative impact section of this report.

Conservation: to protect the natural resources (water, air, land, sand, fishes, etc.), ecosystems (reefs, fynbos), biological abundance (flora and fauna), landscapes and the local culture.

Development: to protect social and economic progress, without damaging or depleting the natural resources (sustainable development).

The findings of this report, coupled with the proposed layout for development of wind turbines, which considers appropriate placement in terms of wind energy capacity, concludes that the development can be permitted within the site if the report's recommendations are followed. The mitigating recommendations in this report consider the ecological, aesthetic, historic and socio-economic value lines that underpin the layers of significance that combine to create the character of the place and the cultural landscape of the Ceres Karoo. These recommendations include road and farmstead complex buffers which incorporate cultivated areas and graves, steep slope and ridgeline no-go areas as well as consideration of the unique land form of the site, CBA and ESA no-go areas, as well as mechanisms to support the non-landowner residents that live on the site in being bale to continue their indigenous land use patterns, knowledge and social systems. These mitigations will reduce the impact on the surrounding landscape and heritage resources but due to the high visual impact of the turbines, largely a result of their height, the negative impact to the cultural landscape cannot be removed, only reduced from very high to moderate.

## 15.2 Heritage Indicators

The conclusion of this CLA study has culminated in the map (Figure 47) showing location of proposed turbines and WEF infrastructure with the following heritage indicators and development buffers:

- Landscape units D and E are suitable for sensitive WEF infrastructure development;
- A 500m buffer to either side of the district road for turbine and infrastructure placement (Patatskloof WEF does not propose turbines or infrastructure within this buffer);
- 300m buffer to either side of identified significant historic farm roads (pink) for turbine placement, substation and laydown areas;
- The historic route (yellow) that passes through Stinkfontein site is no longer in use as such, but should be reinstated as a walking trail and open to public access;
- 1000m buffer around historic farmsteads (red circles) for turbine placements; and

- 50m outer boundary buffer for roads and infrastructure around farmsteads including cultivated areas and graves – integrity of farmstead complex as a whole should be retained and no WEF roads running through farmstead complexes;
- 200m freestanding graded heritage structure buffer for new roads and infrastructure;
- 100m buffer from cemetery or unmarked burial for all development;
- 400m buffer around water management bio-cultural landscape elements (blue circles);
- 600m buffer around significant Stinkfontein site (orange circle);
- existing roads to be used with minimal upgrade as far as possible;
- riverine corridors 100yr flood line buffer (ecological) or 100m buffer (archeological) whichever is further (buffers not indicated).
- CBA and ESA no-go areas for all development (green shading – turbines 5, 23, 18), unless otherwise recommended by the biodiversity and environmental specialist studies for this site;
- Pienaarspoort gateway buffer included in the 300m farm road buffer and unit A.

Further, the following changes to the current proposed layout is recommended:

- 18 current proposed turbine placements (red) have been found unacceptable for their negative impacts but could be accommodated in landscape unit D where appropriate;
- The substation option 1 and Gridline alternative 3 should be located out of the CBA, without impacting on the riverine corridor flood line and slopes over 3%.

Further heritage indicators and recommendations for construction/ decommissioning and operational phases unsuitable for mapping have been made in the CLA (Section 12 on page 66) and are necessary for the identified negative impacts to be reduced from very high to medium negative impact of the proposed Patatskloof WEF and associated infrastructure on the cultural landscape.

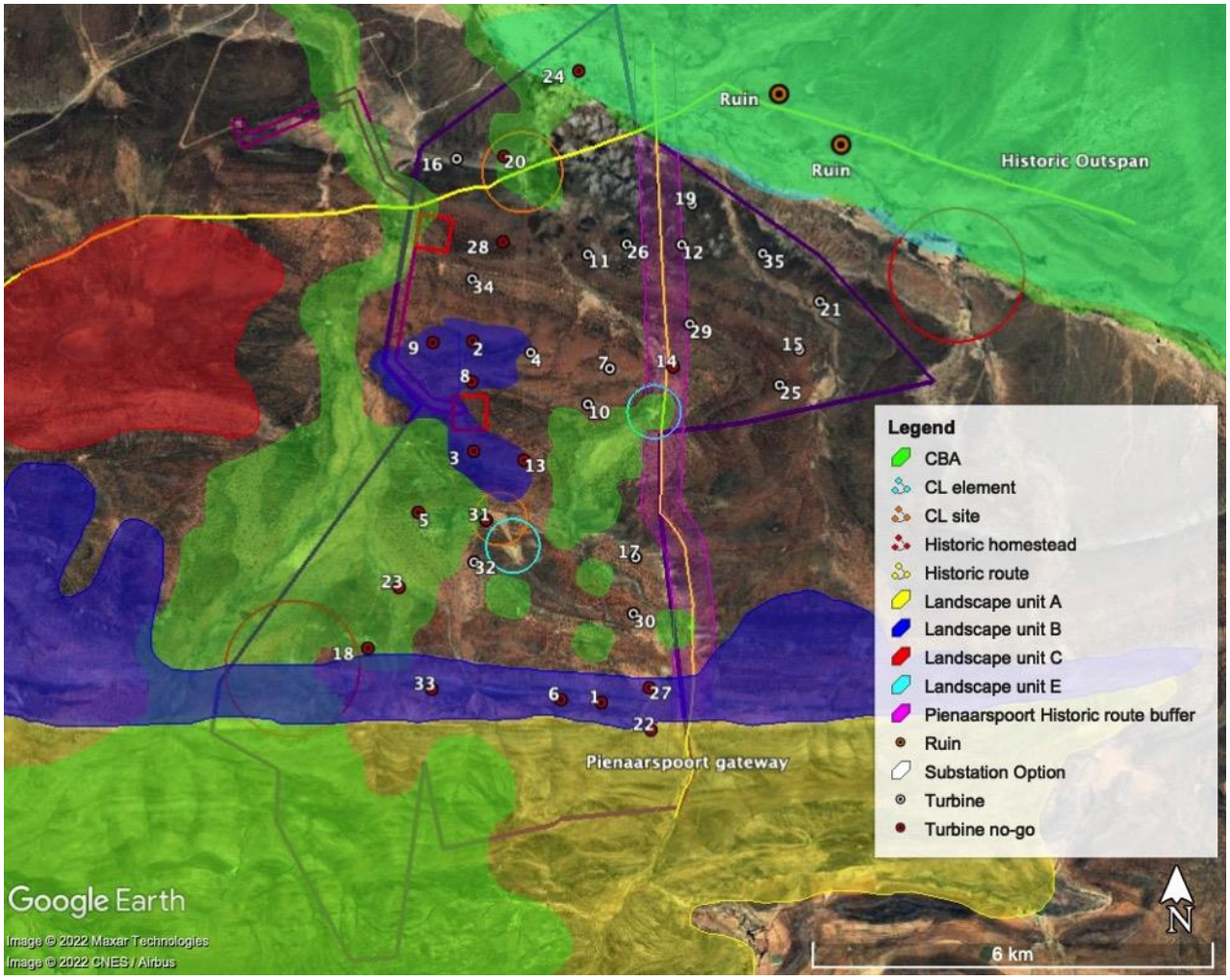


*Figure 47: Cultural Landscapes Assessment heritage indicators and buffers map for proposed Patatskloof WEF development (Note: 100m/ flood line riverine corridor buffers not indicated).*

## 15.3 Conclusion and Impact Statement

From this study it is recommended that only 18 of the turbines are not feasible in their current proposed locations for the proposed Patatskloof WEF when taking into consideration impacts to cultural landscapes. The substation and gridline locations require some layout alteration to accommodate the CBA.

With these buffers in place and all other recommendations followed, the overall impact to the cultural landscape for the proposed Patatskloof WEF and associated grid connection and infrastructure can be reduced from very high to moderate.

There are no fatal flaws and the development can proceed with CLA recommendations and mitigation in place.

## Review of cultural landscapes assessment based on updated proposed buildable area dated 14/11/2022

SiVEST proposed approval of a buildable area (14/11/2022) for the Patatskloof WEF based on specialist sensitivities. This proposed area was assessed for impact to cultural landscapes.

The proposed buildable area considers and adheres to most of the cultural landscapes buffers and sensitivities contained in the April 2022 CLA report other than slope, which has not been included. As indicated in the CLA report (April 2022), all slopes over 10% need to be avoided for development of turbines and new road infrastructure. Slopes over 3% need to be avoided for other infrastructure development including gridline. Please see section 10.1.2 for motivation. More detailed slope development mitigation could be considered through micro-site assessment, by suitably qualified cultural landscape specialist, on final layout of the proposed WEF and gridline development.

The map below overlays the CLA sensitivities map with the 14/11/2022 proposed buildable area and includes the slope sensitivities that need to be avoided for WEF development.

Note that this mapping does not consider the impact of the proposed Patatskloof gridline on cultural landscapes resources as it has not been provided for in the proposed buildable area.

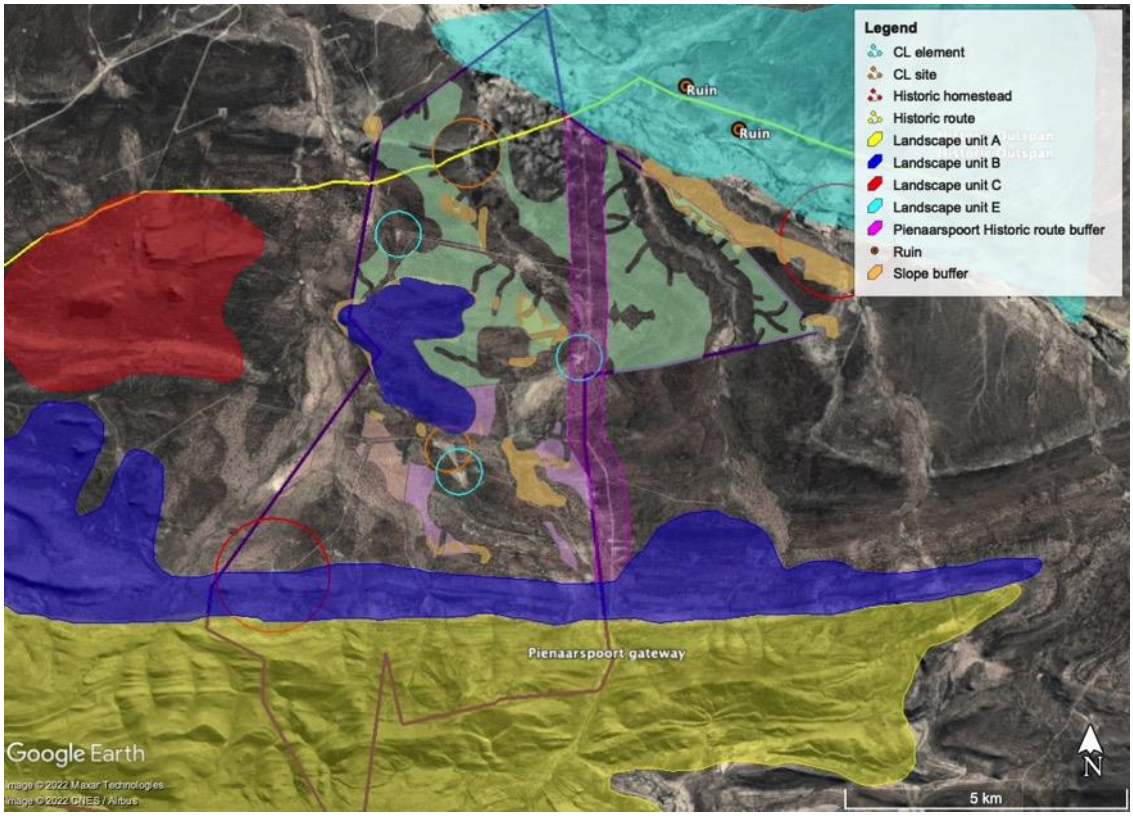


*Figure 48: Cultural Landscapes sensitivities map for proposed Patatskloof WEF and gridline. Slope classes over 10% (mapped in orange) have not been avoided in the proposed buildable area (14.11.22). CBA buffers have been removed but should be considered in tangent with relevant environmental specialist studies.*

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